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ON THE COVER (from top) Associated RC10T3 Ready to Run; Parma 200mm Gangstar body; Trinity Monster Maxx motor for E-Maxx; KO Propo Mars Special Edition transmitter; HPI Super Nitro Rally RS4; Novak brushless motor prototype (photo courtesy of Novak). All other photos by Walter Sidas.

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Fast, loud and simple straightline machines
by the Staff of RC Car Action

The Art of RC

I have just returned from the Mecca of RC: the National Model and Hobby Show, held annually in Chicago. The NMHS event is where the RC industry unveils all the latest gear for the upcoming year (you can see

the hottest stuff in this issue and at www.rccaraction.com), and it's always an eye-popping show. No matter how exciting and innovative last year's stuff seemed, the new stuff blows it away. The imagination and expertise that goes into an RC vehicle still impresses me, as I'm sure it impresses you, but I think you'd be even more impressed if you knew what it takes to turn RC dreams into reality.

As hobbyists, we only see the end result. We bring home a shrink-wrapped kit, open it up and consider the parts only in terms of their roles in the vehicle—nothing more. When we look at a suspension arm, we think, "Is there enough material around the hinge pins? Is the plastic stiff enough? Does the geometry look good?" These are the same types of questions the designers asked themselves as they created the plans for the arm, but they also had to consider so much more. Take shrinkage, for example. If the arm needs to be 5mm thick, the cavity in the mold can't be 5mm thick; it has to be thicker because the plastic shrinks as it cools. How much thicker? That all depends on the type of plastic being used, the volume of the part, the types of fibers or other materials that might be mixed into the plastic, the plastic's temperature when it goes into the mold and the pressure with which it's injected into the mold—among other things. The designer also works on a range of other problems: how to configure the parts in the mold, since the molding equipment is large enough to hold more than just one; how to arrange the parts to maximize the available space, which helps reduce the cost of the parts; which parts to mold along with the suspension arms to best take advantage of the material used for the arms. These are just some of the considerations that go into every molded piece of an RC car; it's much more complex than just spec'ing a certain length, width and height for a specific part.

I can only imagine what it's like to have the engineering foresight of Cliff Lett, Gil Losi Jr., Akira Kogawa and the other top RC car designers. It's one thing to be able to conjure up a design for a car that will perform well—that's achievement enough—but to also see in the mind's eye how to do the job with the fewest parts, how to make them fit together easily and come in at a cost that the average hobby guy can afford—that's truly amazing. To me, a well-conceived RC car is a technological miracle. Associated TC3, moon landing, Losi Triple-X, Stealth bomber—they are all the same thing.

As hobbyists, we imagine ourselves to be engineers, able to tell a good design from a bad one, always ready to improve what the maker considered to be "finished." That's all part of the fun (and to our credit, sometimes we do outthink RC's smartest guys!), but I always have a certain reverence for my favorite cars. I might think I have a better way to mount a transponder in my TC3, but I know I could never design a better TC3. I'm fine with that; I'm just glad that there are smarter guys than I out there who are trying to build better kits, and when they succeed, I'll get to have fun with those cars, too.

Peter Vieira
Executive Editor

Radio Control Car Action turns 15!

Back in 1986, RC enthusiasts looking for information about the exploding car scene had to content themselves with the occasional story in an airplane mag or seek out one of the newsletters of the sanctioning bodies—no easy feat in those pre-Internet days. Then along came *Radio Control Car Action*, and suddenly, anyone with access to a newsstand could get a heaping helping of, well, RC car action! On behalf of all our readers, who inspire us every day, and all the manufacturers, who create all the cool stuff we love so much, thanks for a fantastic 15 years!



and MAD back in the day; I don't need to tell you which magazine I took home!

RADIO CONTROL car action

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Tyler said it

"When the batteries get there before the car, it will only add to the torture" ("You Said It," November 2000 issue). Very deep, Tyler; you would be a good philosopher. I'm a teenager myself, only 13.

I was thinking about buying a truck, and when I saw the RTR Traxxas Rustler, I thought, "That's the truck for me!" The hobby shop had to order it for me, but I got its charger and batteries while I was there. It was pure torture when I had them but not the truck. After I had been bombing around town with the Rustler for a few weeks, one of my friends asked me to come to the track and race. So now I'm a racer. So far, I've won the novice B-main three times, and I came in second in the B-main once. (It was a trophy race. Go figure!) I know you guys have heard this before, but your mag rocks! [email] ADEM RUDIN (Not a typo; I spell it like that.)

P.S.: For those who say they read your mag until it falls apart: don't let it fall apart! You know that really wide, clear tape (I think it's called "book tape")? Put a big strip of the stuff over the magazine's binding.

Thanks for the spelling tip—and the binding tip! I've always felt *Radio Control Car Action* should be in hard cover. Better yet, hard cover and 3D (special glasses included in each issue, of course). —Pete

T-Maxx! T-Maxx! T-Maxx!

I just had to write in to say that the "Triple Threat: the World's Wildest T-Maxxes" article in the November 2000 issue was awesome. I think you guys should build a "Project" car every month; that would be totally cool. I like that you include all the part numbers, too. Bob's low-rider T-Maxx rules! [email] DARREN FANELLI

Mega-Maxx is da bomb! [email] RC TRUXSTER

Those T-Maxxes were the coolest things ever in *RC Car Action*, but Steve's was the best. Those Hardcore arms are too sweet!! Will you do a follow-up with more "Project" T-Maxxes? [email] WAYNE GARCIA

We had a blast building them, and we're glad everybody was so stoked; getting you jazzed up is why we built them in the first place. I'm sure there will be other Maxx projects, and I know Kevin will always have a Traxxas trick or two up his sleeve in his "4x4" column. Stay tuned. —Pete

Make a Scene!

I have a Bolink Nitro Pro-Stock Camaro and have had considerable trouble trying to find info on drag cars and places to race. I live in St. Louis, MO, and know only



one place to race RC, and it's off-road. Could you send any info and/or print my email address, so

maybe I can find someone to race with and share tech tips?

DENNIS PETTY
St. Louis, MO
LiLiDeBr@aol.com

Anybody in St. Louis want to run against Dennis? Email him! One of the best things about drag racing is that all you really need are 132 feet of blacktop and someone to say "Go." Make your own RC drag scene (or touring cars, or monster trucks, or whatever!) I'm sure you'll get some responses to your letter, but the best way to start an RC scene is to run your car where people can see it. Blast your Bolink across a parking lot where you can attract some spectators (be safe!), and I'm sure you'll have a few guys hooked. —Pete

Wannabe Racer

I have owned a couple of sport cars, a TL01 and a Kyosho Ultima EP Readysset. I now want a racing car, particularly an electric touring car. I attended a race with my TL01, and I liked it. I won the C-main against another kid with an HPI RS4 Sport 2.

What do I need to race reasonably competitively? I have four 1500mAh batteries, a 3000 NiMH sport pack and a basic charger. Do I need a peak charger? What would you suggest I buy? What's the fastest top speed I can expect with an electric touring car? NATHAN San Francisco, CA.

You're already racing, so I guess you don't really need anything, but you can be more competitive with a few well-chosen purchases. Definitely buy a peak charger—not a big-dollar one; one of the "budget" chargers we reviewed in the last issue's "Sport Peak Charger Guide" will work well for you. Race stock class and buy a good, rebuildable stock motor, like a Trinity P2K, Reedy Rage Type R, or the new Orion Chrome RS (reviewed in this issue). Get oil shocks for your TL01 but don't spend a lot on other hop-ups. Even if you install all the available options, you'll have a tough time competing against cars with dedicated racing designs once you graduate from the novice class. Run the TL01 until you feel it's holding you back, and then upgrade. If you like Tamiyas, try a TA04. There are tons of other things you can spend lots of money on—FM radios, motor lathes, matched packs—but you certainly don't need them to have fun at a local race. To answer your speed question: a fully race-prepped, 6-cell touring car will top out at close to 40mph if geared for maximum speed. —Pete

YOU SAID IT Support For Team CPP

My heart raced when I saw the new cover of *RC Car Action* on the magazine rack. For a week, I had been receiving emails from across the country, and I already knew that our team was really in the magazine ("Chris's Back Lot," November 2000), but I just had not been able to find a copy! Now that I have read it, I can truly thank you for your time and support in covering this. The students were stunned to see the article. The students' parents, teachers and friends were also very proud.

At this time, I am taking steps to include other companies in this project. This next racing season will include the six students that you featured in the article. They have moved on to high school and will come back as mentors. This year, eighth graders will partner with those mentors and will also have personal sponsors from a local company. The school has asked that I also include seventh graders as "apprentices" to the eighth graders. The group will total 18 students, six profes-

sionals, teachers, school staff and myself.

We will meet this month to plan for the next year. The new kits will be opened in mid-January. Building will happen once a week over two months, and I hope to start racing in March.

My vision is for 2002. I see 20 to 30 corporate sponsors, and about 70 to 100 students. I see all the local schools participating, and I see a full-time endeavor. Kenneth B. Hawthorn

In case you missed "Chris's Back lot," Team CPP is Ken's vision of helping kids improve their self-esteem through the world's greatest hobby: RC. You know that great feeling you have when you finish off a kit that you've built yourself? That's what Team CPP is all about. I'm glad that we—especially Chris—could help out the team, and I'm very pleased that the RC industry is lending a hand, too. RC people are the best! —Pete



Team CPP is already getting hooked up with gear from its industry supporters, so I just kicked down some *RC Car Action* decals to keep the Team rigs looking good.

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

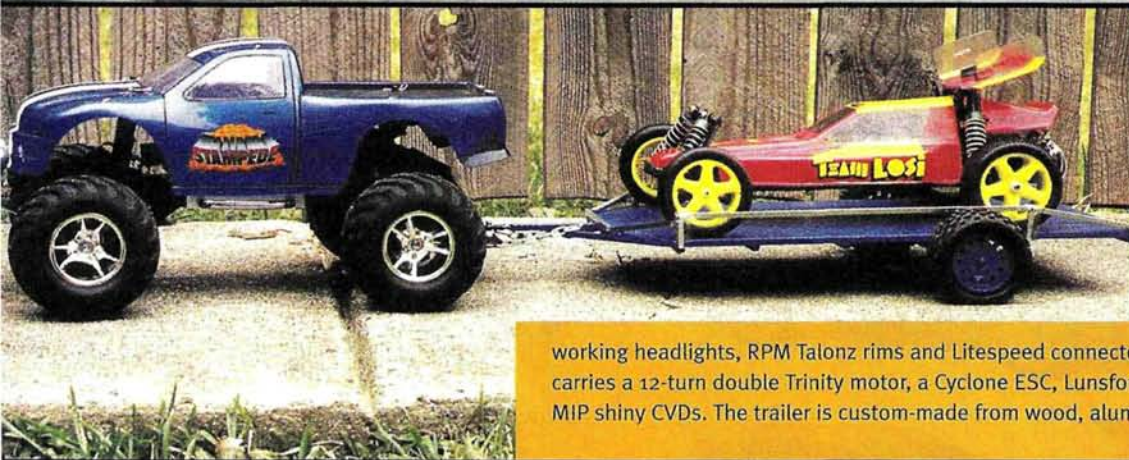
EMAIL ■ Derek Buono: derekb@airage.com ■ Chris Chianelli: chrisc@airage.com ■ Bob Hastings: bobh@airage.com ■ Kevin Hetmanski: kevinh@airage.com ■ Steve Pond: stevep@airage.com ■ Peter Vieira: peterv@airage.com ■ Greg Vogel: gregv@airage.com

Win a \$500 gift certificate from DuraTrax! Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids), and a brief description, to Readers' Rides, *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free RC Car Action decal sheet and will be eligible to win a \$500 gift certificate from DuraTrax in the "Readers' Rides of the Year" contest. Write your address and phone number on your letter and on the back of every photo you send. Good luck!

Readers' Rides

Jeff Hansen, Kenosha, WI Bolink Rocket Funny Car

Jeff admits he had to put in more thinking time than actual building time to convert this Bolink funny car to Aerotech rocket power. The Bolink kit has two parachutes that deploy at the end of each run, and it also has a back-up brake system. Jeff says he gets comments wherever he goes, and he plans to build a second one for his wife.



Dug Cole, Ocean Springs, MS Traxxas Stampede and Team Losi Double-X 'CR'

Don't think that this dynamic-looking duo is all show and no go! The Stampede has a Trinity 13T motor and features an ESP bumper with

working headlights, RPM Talonz rims and Litespeed connectors. The Graphite Edition Double-X 'CR' carries a 12-turn double Trinity motor, a Cyclone ESC, Lunsford titanium hinge pins and tie rods and MIP shiny CVDs. The trailer is custom-made from wood, aluminum and assorted spare car parts.



Craig Chirnside, Wakari, Dunedin, New Zealand HPI Super F1

Craig's RC club has a spec class of HPI Super F1s. The Johnson 540-powered racer is painted to resemble the 2000 Arrows scheme and equipped with custom-cut decals. The racer's electronics include a JR XR2 radio, a Futaba mini steering servo and a Novak Tempest speed control.



Cuong Tran, Pasadena, TX ESP Clodzilla III and Bolink Digger 2

This Clodzilla III is equipped with a full race kit plus a pair of Trinity 17-turn Sapphire motors coupled to a Novak Super Rooster speed control. The monster has blue-anodized Thunder Tiger shocks and blue screws throughout, and it's topped off by RAM lights, ESP bumpers and a rear steering link. A Futaba 3PDF radio and metal-gear Cirrus CS-80 servos provide control. Cuon's wheelie-popping Bolink Digger 2 has a Trinity 17-turn Sapphire and Novak speedo on board.

sponsored by **DURATRAX**

Readers' Rides

Steve Walters, Citrus Heights, CA Associated RC10T3

When your truck rules the streets, woods, track and beach, why not go for a superhero theme? The "Captain America" Associated T3 gets outfitted with Pro-Line Road Hawks, Fuzzies, Sand Paws, or Dirt Paws, depending on the terrain. A 14-double motor and Novak 410M1c ESC power the crime fighter, and Steve uses a Futaba transmitter for control. Panting in approval is Steve's dog/sidekick, Ginger.



Ken Prather, Boynton Beach, FL Associated Dual Sport Qualifier

Ken's 1/10-scale lime green racin' machine is mostly stock, except for the Novak Rooster reversing speed control. He also added HPI tires and wheels for more of a Euro-look compared with the kit's stock black setup. Ken has no problem finding a place to run; he races on a track he built on his patio roof!



Michael Nuchols, Maryville, TN Associated RC10L30

Beneath this Protoform Taurus body are a Novak Duster II speed control, Orion V-Max 2000 cells and BSR radial tires. Michael keeps his stock car on the track with a Futaba Magnum Jr. radio and uses a Trinity P2K motor for power.



Gordy Smeal, Mt. Joy, PA Associated RC10T2

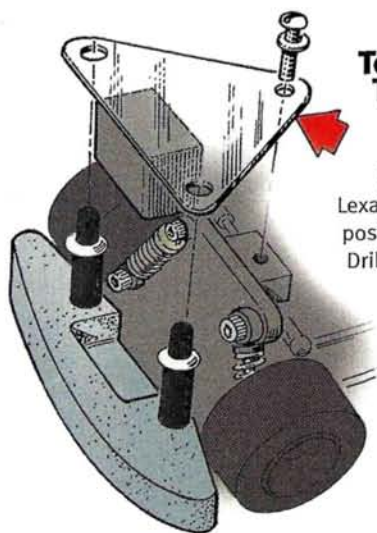
Powering Gordy's T2 is a Fantom stock motor with a Power Pulse speed control. His hop-ups include a Robinson Racing slipper clutch, RPM ball cups and Associated titanium tie rods. Topping it all off is a Dahm's Cyber Buggy body for a unique look. ■

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Pit Tips

ILLUSTRATED BY
JIM NEWMAN

WIN AN OFNA Z-10 RALLY! Radio Control Car Action will give a 6-month subscription (or extend an existing subscription) to the author of each idea used in "Pit Tips." "Top Tip" winners receive an OFNA Z-10 Rally kit. All published "Pit Tip" authors receive an OFNA yo-yo. Send a rough sketch to Jim Newman, c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one nor return unused material.



Touring-Car Transponder Mount

Instead of hacking up your touring car's body to mount a transponder, use a piece of sheet Lexan that fits over the front body posts and runs back to the chassis. Drill holes for the posts and

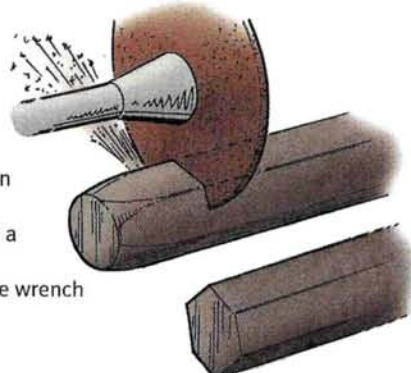
transponder. The unit will then stay safely suspended in between the posts without wrecking your paint job.

JOE ORSE
Bridgeport, PA

Salvage Operation

Here's a way to salvage those worn-out Allen wrenches: cut off the worn tip of the wrench using a rotary tool equipped with a cut-off wheel. Be sure to remove any burrs from the wrench before you use it.

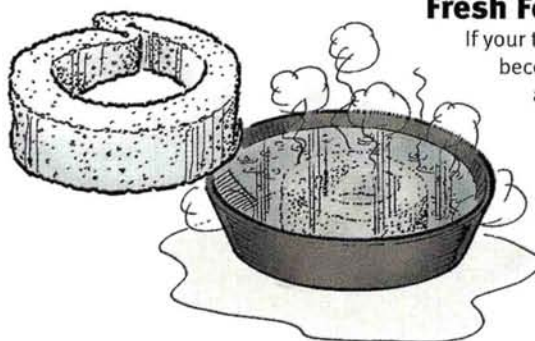
STUART SNYDER
Galveston, TX



Fresh Foam Inserts

If your tire's foam insert has kinked or otherwise become deformed, soak it in warm water, and wring out the excess moisture. When the insert has dried, it will have regained its original shape.

GARRETT WELLER
Columbia, TN

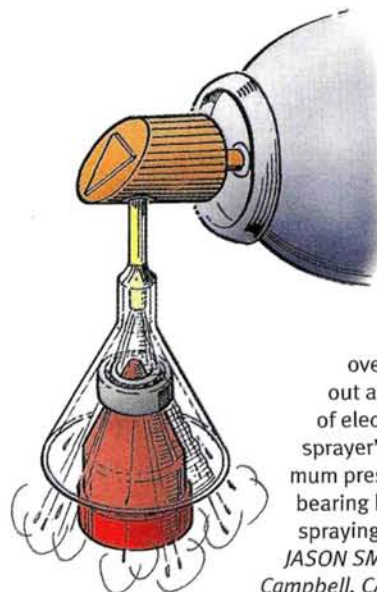
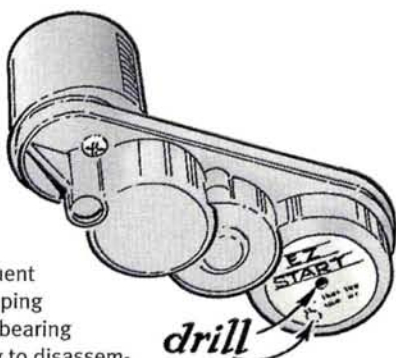


TOP TIP

No-Slip EZ-Start

The one-way bearing in the Traxxas EZ-Start requires frequent cleaning to prevent it from slipping on the pilot shaft. To keep the bearing and shaft clean without having to disassemble the engine, drill a 3/32-inch hole in the rear of the starter case (in the center of the label) and one in the case's bottom, too. A quick shot of motor spray directly into the assembly will clean the bearing and shaft and ensure trouble-free operation. Be sure to cover the holes with tape afterward.

BEN AVARA
Elkridge, MD



Budget Bearing Blaster

When it's time to clean your ball bearings, place them on a small, pointed cap (such as one from a can of Hobbico's After-Run oil). Place a small funnel over the bearing and blow out any trapped dirt with a can of electric motor spray. Use the sprayer's wand to apply maximum pressure. Be sure to apply bearing lube when you've finished spraying.

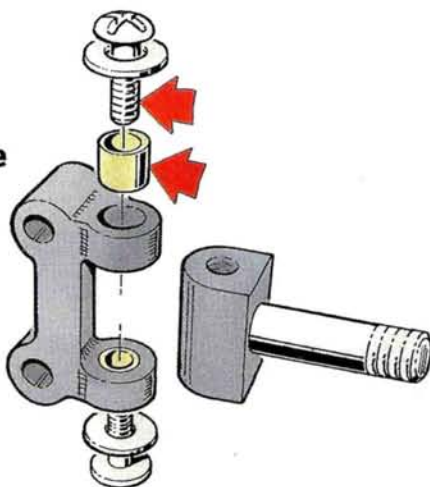
JASON SMITH
Campbell, CA

Pit Tips

Kyosho Kingpin Substitute

If the steering-knuckle kingpin on your Kyosho 4WD vehicle has become bent or otherwise requires replacement, try this simple substitute. Install a $\frac{3}{16}$ -inch length of $\frac{1}{8}$ -inch-diameter brass tube into both sides of the knuckle carrier, and use a pair of 3x8mm machine screws as kingpins.

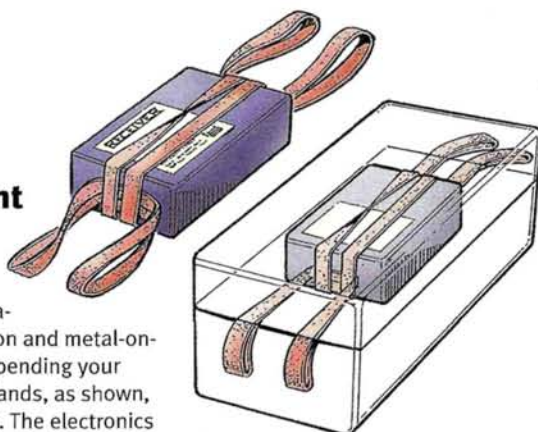
STEPHEN MALFATTI
San Ramon, CA



Rubber Receiver Mount

Larger gas-powered cars are sometimes plagued by radio interference from vibrations, electronic ignition and metal-on-metal contact. Try suspending your receiver with rubber bands, as shown, to make a sling mount. The electronics are now isolated from vibration, separated from chassis "noise" and better protected during an abrupt stop.

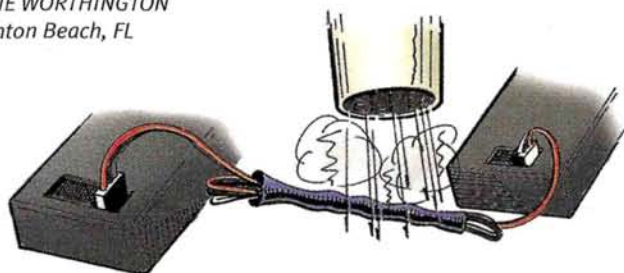
MIKE UNDERWOOD
Medford, OR



Wire Retainer

If you want a more attractive method of bundling your wires than by simply using a bunch of zip-ties, gather and fold the excess wire, and use a length of heat-shrink tubing to hold them together.

EDDIE WORTHINGTON
Boynton Beach, FL



Sticker Sorter

An expandable folder from an office supply store provides a handy method for sorting your decals. The upright design prevents the decals from becoming creased, and the multiple compartments enable you to organize them into many categories.

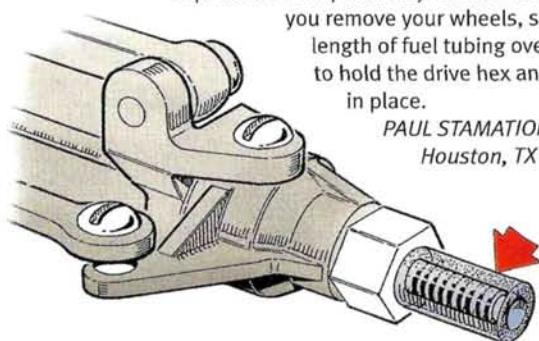
KEVIN BOTARING
New York, NY



Crosspin Saver

The only thing that disappears more quickly than body clips is the crosspin from your axle. The next time you remove your wheels, slide a short length of fuel tubing over the axle to hold the drive hex and crosspin in place.

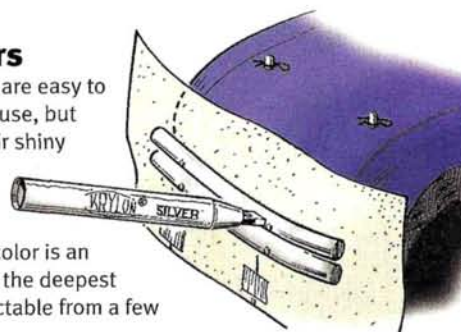
PAUL STAMATION
Houston, TX



Bright Bumpers

The T-Maxx's bumpers are easy to scratch during normal use, but it's easy to restore their shiny appearance. Use a Krylon metallic silver paint pen where the black is exposed; the color is an exact match, and even the deepest gouges will be undetectable from a few paces away.

MATT DORNIER
Downers Grove, IL





ROBINSON RACING PRODUCTS

Troubleshooting

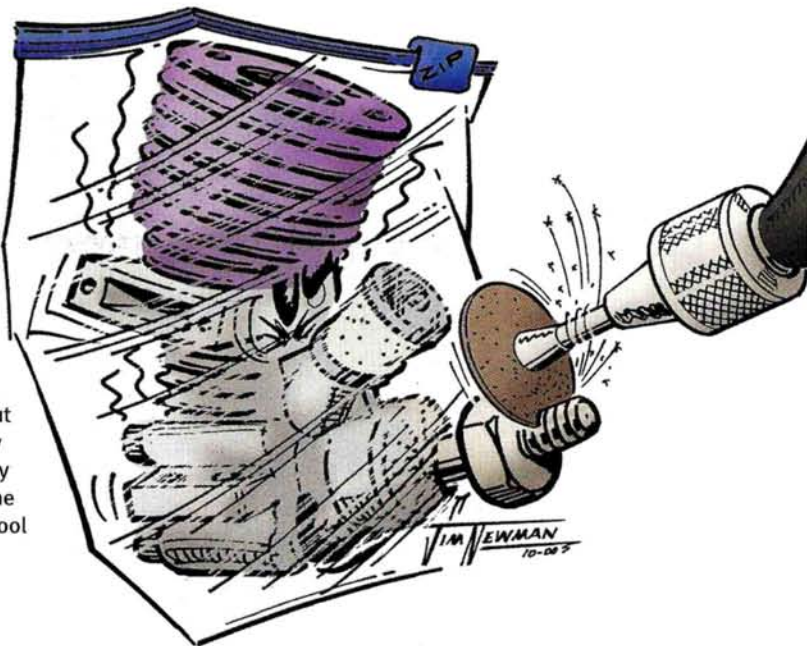
BY DEREK BUONO • ILLUSTRATIONS BY JIM NEWMAN

Cut the Shaft

I just bought a new engine for my Losi NXT, and the shaft is too long. How do I cut the shaft without ruining its threads? [email] Chris Klaus

Cutting the output shaft to the proper length is very easy with the proper tools. Use a rotary tool and a cut-off wheel to cut it. Since the shaft is heat-treated, it's very difficult to cut without a rotary tool. First, wrap the engine in a rag or a plastic bag to prevent debris from getting into it. Next, thread a clutch nut down the shaft until the length of shaft you wish to remove is left exposed past the nut. Use the edge of the nut as a guide for the cut-off wheel. Cut as straight as possible, and take frequent breaks to avoid overheating the shaft. When you're finished, remove the nut and clean the threads. The nut will remove most burrs, but you may wish to touch up the end of the shaft with a metal file to remove any sharp edges. If you don't have access to a rotary tool, you can do the job with a hacksaw. Just follow the same steps, but replace rotary tool power with elbow grease.

If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at *Radio Control Car Action*, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.



New Traxxas Aluminum Shock Components Work With Your Stock Parts!

T-Maxx Blue Shock Bodies



CNC machined, blue anodized aluminum shock bodies, sold in pairs. RRP \$511

Blue Lower Spring Retainers



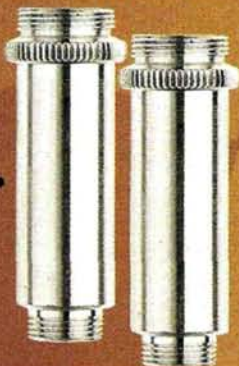
Machined, blue anodized aluminum retainers, sold in pairs. RRP \$516

Aluminum Upper Spring Retainers



Machined upper spring retainers, sold in sets of 4. RRP \$530 8mm, RRP \$520 4mm

T-Maxx Silver Shock Bodies



CNC machined, natural silver aluminum shock bodies, sold in pairs. RRP \$510

Silver Lower Spring Retainers



Machined, natural silver aluminum retainers, sold in pairs. RRP \$515

48P Absolute Series Pinions



Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even off noise is gone! Available in 48P in 16T thru 26T sizes. RRP 1416- RRP 1426

48P / 64P SuperLite Aluminum Pinions



They're lightened, hard coated and precision cut. Available in 48P in 16T thru 26T and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25

48P Hard Nickel Plated Steel Pinions



These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012- RRP 1025

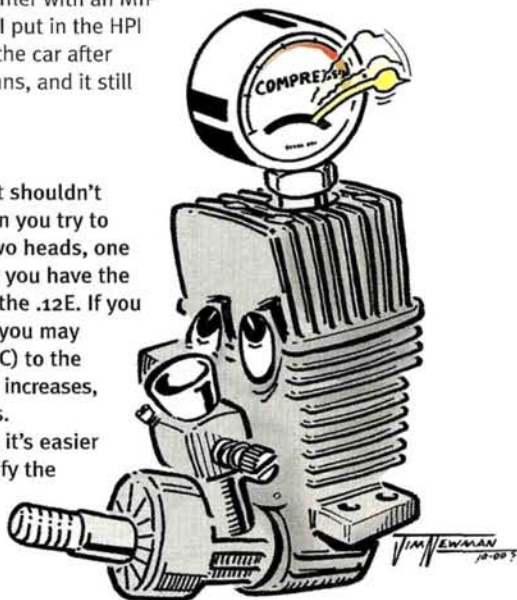
www.robinsonracing.com

Start 'er Up

I have started to hop up my HPI Super Nitro for some serious speed. After I replaced the stock muffler with an MIP tuned pipe, the car ran better and much faster. Because I was worried about engine temperature, I put in the HPI purple machined head and replaced the air filter with one from Motor Saver. When I tried to start the car after that, it just wouldn't run. I did all the things I had read about in previous "Troubleshooting" columns, and it still won't start. What happened? [email]

Paul Behnke

You can safely eliminate the air filter as the cause of the engine's ailments. Unless it's clogged, it shouldn't really affect the engine's ability to start. To be on the safe side, though, remove the air filter when you try to start the engine with the new head. Make sure that you actually have the right head. HPI sells two heads, one for the .12 and one for the .15; unfortunately, they are both purple. A quick way to check whether you have the right one is to count the number of grooves on the side of the head: six on the .15FE and four on the .12E. If you have installed the wrong head on the engine, it may not run at all. When you changed the head, you may have altered the engine's compression ratio. The distance from the piston at top dead center (TDC) to the top of the combustion chamber is related to engine compression: as the distance between the two increases, the compression ratio decreases, and as the distance decreases, the compression ratio increases. Dynamite makes a compression gauge (part no. DYN2514; \$39.95) that quantifies the amount so it's easier to match the stock compression. Then, by removing or adding head shims, you'll be able to modify the compression to match the engine's original ratio. By adding shims, you decrease the compression, and by removing them, you increase it. If the compression ratio is within 10 percent of the stock compression and the engine still doesn't run, it may be time for a rebuild.



1999 World Cup and National Champion

"I only care about performance, and that's why I run Robinson Racing gears and slipper clutches exclusively."

— Richard Saxton

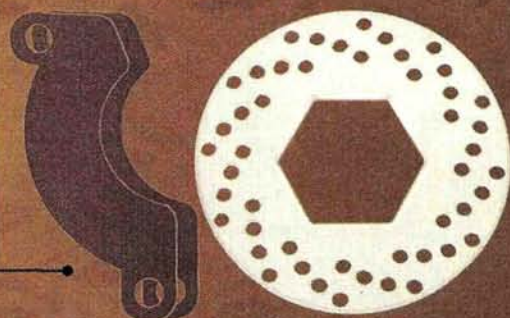
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Rustler/Stampede/Bandit/Sport Nitro/Electric Sun Gears



CNC Machined from a from bar stock, these hardened, Sun Gears will last longer in your Traxxas machine. RRP 8500

T-Maxx Aluminum Brake Kit



New, lightweight aluminum variable braking system, includes bigger, aggressive brake pads and backing plate. RRP 8560

T-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 8551 Blue, RRP 8550 Natural Silver



Hardened Steel Spur Gear With Ball Bearing



Precision CNC machined from solid steel, and then hardened, these spurs will last and last. RRP 8572 T-Maxx and Nitro Rustler, RRP 8565 Nitro Stampede

ROBINSON RACING PRODUCTS

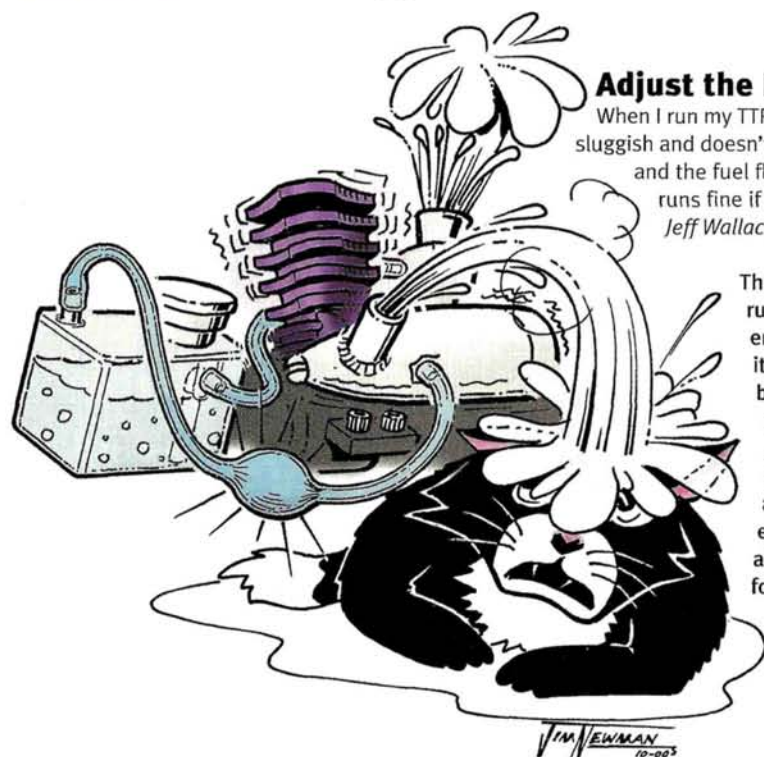
4988 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937



RRP

ROBINSON RACING PRODUCTS

Troubleshooting



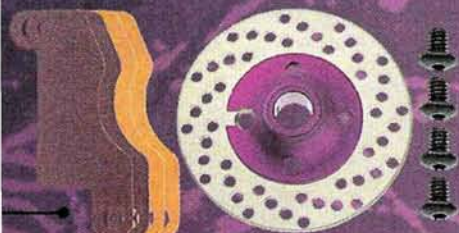
Adjust the Needles for Top Performance

When I run my TTR Mirage V-Spec's engine with the pressure line connected, the car becomes sluggish and doesn't respond well to inputs. I have checked the location of the pressure fitting, and the fuel flows freely when I blow through the line. What's causing this to happen? It runs fine if I disconnect the line. [email]

Jeff Wallace

This is a simple case of improper needle adjustment. The engine is tuned to run without the pressure line, and the settings aren't correct for the different fuel flow you have with the line connected. When the line is installed, it forces more fuel into the carb and causes the engine to richen up and become sluggish, as you noted. Run the engine with the pressure line in place and set the needle about 2½ turns out. It may take a little time to get the proper setting, but be patient. After you've set the high-end needle properly, you can adjust the low-end setting. Allow the engine to idle for about 10 seconds, and then apply full throttle. If the engine dies, the low end is too rich and needs to be leaned out. Rotate the screw clockwise about 1/16 inch at a time. When the engine no longer hesitates after idling for 10 seconds, you have a decent needle setting.

RS4 Nitro Aluminum Brake Kit



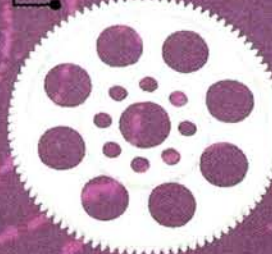
Lightweight aluminum, variable braking system. RRP 1575

RS4 Nitro Vented Flywheel



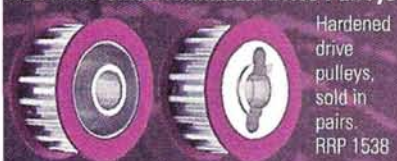
Aluminum vented flywheels move air over clutch bell, improving performance and cooling.
RRP 1570
RRP 1571 Pull Start

Stealth Sedan Spurs



These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any HPI electric car or truck.
RRP 1860 thru
RRP 1896

RS4 Nitro Small Aluminum Drive Pulleys



Hardened drive pulleys, sold in pairs.
RRP 1538

RS4 Top Shaft Pulley



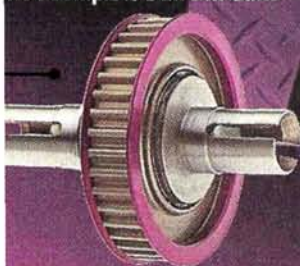
One piece pulley and shaft are precision cut and hard anodized. Purple anodized side flanges are pressed on. RRP 1527

RS4 / Pro / Pro2 / Nitro Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1585

RS4 Complete Ball Diff Units



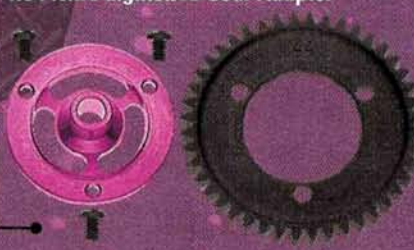
Hardened steel outdrives, ground and polished thrust washers, 2 5x8mm ball bearings, and aluminum pulley.
RRP 1590 Electric
RRP 1595 Nitro

RS4 Diff Pulleys



Precision machined, hard anodized aluminum diff pulleys.
RRP 1539 nitro sedans
RRP 1528 electric sedans

RS4 Nitro Lightened Gear Adapter



This lightened gear adapter includes a machined nylon spur that's tougher than the stock gear and will last longer.
RRP 1535

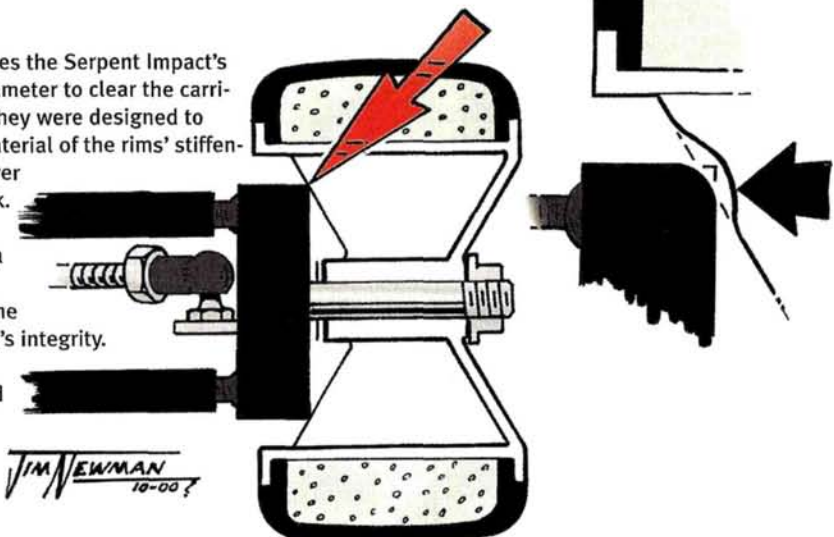
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If the Rim Fits...

I recently purchased a Serpent Impulse, and I am having trouble finding rims that don't hit its front hub carriers. Aside from the factory rims, do any other rims fit, or do I have to modify my car and/or the rims? [email]

David Earth

The rim choice on the Impulse is more crucial because it uses the Serpent Impact's on-road hubs, which require wheels with a larger inside diameter to clear the carriers. Most other sedans do not have this problem because they were designed to use standard 2-inch rims and to accommodate the extra material of the rims' stiffening ribs. If you don't use the correct rim, it could hit the lower or upper carrier block and cause binding or even wheel lock. Check to see whether your rims have enough clearance. If there isn't enough, remove material from the carriers with a file or sanding wheel to make the wheels fit. If the block's front face hits the rim, you might have to remove some of the rim's inner webbing, but be sure not to compromise the rim's integrity. With careful selection and some minor sanding, most rims will work on these pivot-ball cars. Pro-Line, OFNA, RPM and Yokomo all offer rims that fit on the Impulse. ■



JIM NEWMAN
10-00

RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MIP shoes. RRP 2365

www.robinsonracing.com

Blue Lightened Slipper Kit



The rear plate is hard anodized and the front plate is color treated. The front plate holds the pad forcing it to slip on the rear plate. When pad wears, just flip it over for a new surface. RRP 1515 Associated, RRP 7515 Kyosho Ultima

Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and hardened for super quiet precision and extra long life. Jamin' tranny grease is included. RRP 2213 RC10-GT, RRP 7505 Ultima GP-R

Associated Titanium Stealth Top Shaft



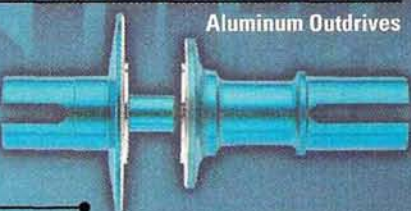
CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

Hardened Diff Gear



Hard anodized precision CNC machined aluminum diff gear. RRP 1513 RC10-GT RRP 7500 Ultima GP-R

Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1475 TC3, RRP 1502 B3/T3

TC3 Ultra 48 Pitch Spurs



Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T to 80T, RRP 1680.



ROBINSON RACING PRODUCTS

4968 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937

SPECIAL EDITION "INSIDE SCOOP"

2001

AN RC ODYSSEY

The best gear for the New Year

IT'S SHOW TIME! THE "CHICAGO HOBBY SHOW" is where the RC industry pulls back the curtain on all the cars, trucks, electronics, support gear and accessories it plans to hit us with during the next 12 months; and every year, we're right there with our cameras and computers to capture the new stuff in words and pictures. There's more gear at the show than we can fit here, so we picked the highlights. See for yourself!

by the staff of RC Car Action

Novak goes Brushless!

WILL MOTOR TECHNOLOGY CHANGE FOREVER?

Others have tried brushless motors before; you may remember the Aveox motors that powered some of the Insane Speed Run velodrome cars a few years ago, and we've heard of other companies making small steps toward developing a car-specific motor, but none have been as ambitious—or brought as much technological clout to the job—as Novak.

The simplest way to describe a brushless motor is that it is "inside out"; the windings and laminations are static (the assembly is actually called a "stator") and form the motor "can." The magnets are bonded to the rotor ("armature shaft," in a standard motor), which fits inside the stator. So where's the commutator? There isn't one. No brushes equals no commutator, and that means no brush/comm friction, no arcing and no wear; the only parts you should ever have to maintain in any way are the bearings. Here's what Novak promises from the system:

- Over 85 percent efficiency, compared with less than 60 percent for brushed motors.
- Greater power output and longer run times.
- Virtually no maintenance required.
- Reduced electrical "noise."
- Higher maximum rpm with quicker acceleration.
- No capacitors or diodes required.

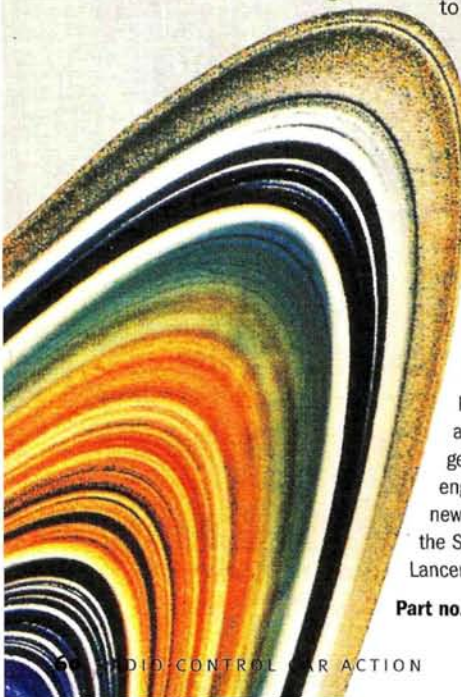
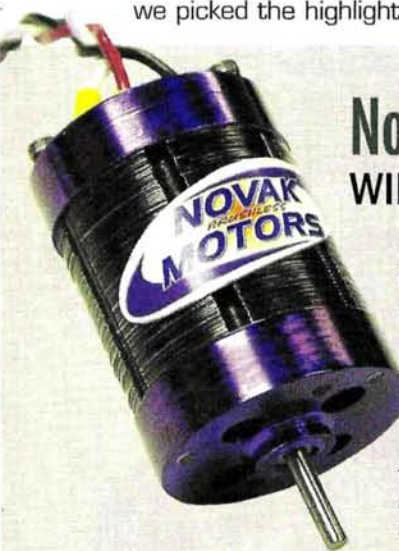
Brushless motors require new ESC technology, and Novak's motors will include proprietary speed controls. We'll have more information—lots more—as Novak dials in the final product for a projected summer release.

TECH
BREAKTHROUGH

HPI Super Nitro Rally

HPI's on-road/off-road "super" car is basically a Nitro MT with Super Nitro RS4 arms, so you get dirt-friendly shaft drive, a pull-start HPI .15 engine, full bearings and plastic-body shocks, plus new super-size rally-tread tires. The real star here is the body: the Suzuki Escudo Pikes Peak racer looks like a NASA project. For more conventional tastes, there's the Mitsubishi Lancer Evo VI.

Part no. 461 (Mitsubishi Lancer Evo VI), 462 (Suzuki Escudo); \$510 (list price).





Associated reveals Nitro TC3 prototype WILL GAS GUYS CATCH TC3 FEVER?

Remember when the electric TC3 came out? It seems as if it was just a year ago. Wait ... it was a year ago. Now proud papa Cliff Lett is showing off his Nitro TC3 prototype, which looks very close to being ready for the world. You could say that some of the Nitro TC3 is already available, since the wide-track arms that pump the width up to 200mm are used in the TC3 rally conversion kit, and many electric TC3 parts will be used on the nitro car. Here's the feature breakdown, but nothing is set in stone yet:

- Uses electric TC3 diffs, arm mounts, hubs and shock towers.
- Sealed radio box.
- Clutch-style, competition-ready 2-speed transmission.
- Racer and Team versions are likely (pure speculation time: maybe Associated will do an RTR version with the new .15 engine).

More info to come; keep clicking over to our website and reading *RC Car Action*!



**SPY SHOT
PROTOTYPE**



HITEC Digital Programmable competition servos

These digital servos are offered in versions to suit all types and scales of model and are designed for precise centering, increased resolution and heavy-duty holding power.

Part no. HS-5625MG (0.13 sec., 93 oz.-in.), street price \$59.99; HS-5645MG (0.18 sec., 133 oz.-in.), \$59.99; HS-5925MG (0.08 sec., 128 oz.-in.), \$99.99; HS-5945MG (0.13 sec., 180 oz.-in.), \$99.99; HS-5735MG (0.15 sec., 250 oz.-in.), \$89.99.



TAMIYA Ferrari 360 Modena Challenge TA04

This stunning Ferrari displays all the usual Tamiya attention to detail, and the new tub-chassis version of the dual-belt TA04 is underneath. Motor, mechanical speed control and ball bearings are included.

Part no. 58266; \$385 (list price).

COMPETITION ELECTRONICS TurboCharger Pit Bull

The TurboCharger line has long been a favorite of hardcore competitors, and the Pit Bull is sure to be another top choice thanks to its nickel-metal-hydride compatibility. Naturally, the Pit Bull will also charge all Ni-Cd packs, and popular TurboCharger features such as a 32-character backlit display and full programmability return on the new model.

Part no. CEI4300; \$229 (list price).



TRINITY Green Machine 3 rebuildable stock

The Green Machine is fully rebuildable with a P2K endbell (so it has those handy built-in capacitors), but the can and armature are new. The arm uses the P2K laminations in a tri-rotor format, and the can has three large openings for increased airflow. You can also get the GM3 in a Pro version with a diamond-trued comm, 4499 brushes, zapped magnets and a dyno sheet. According to Trinity, the Green Machine 3 is designed for greater rpm than the torquey P2K. For big tracks and ovals, the GM3 could be the hot ticket.

Part no. 9426 (standard), 9427 (Pro); \$39.99.

2001

AN RC ODYSSEY

Team Losi Tosses Two Belts

NEW SEDAN PROTOTYPE REVEALED

It isn't called—and won't be called—the "XTC," but team Losi's Street Weapon replacement is shaping up to be very interesting. First and foremost, it has an innovative single-belt drive train that is extremely free-running. Certainly, some of the setup's nearly frictionless feel is owed to the car's "works" nature, but one spin impressed us. Even in kit form with non-massaged bearings, we think it will be impressively smooth.

The suspension is trick, too; check out the high-rise rear arm mounts and the wide-track shock towers. Lots of machined parts and carbon fiber are in evidence, but that's just part of the prototyping process; like other Losi vehicles, the finished car will be constructed of molded composites. The new car will also feature:

- Low-rotating-mass drive-train parts.
- Fully adjustable suspension package.
- Versatile design that will perform on asphalt and carpet surfaces.
- Enclosed single-belt drive.
- Precision ball differentials.

More info to come; keep clicking over to our website and reading *RC Car Action*!



OFNA OB4 International RTR

Can you believe this graphite and aluminum beauty is an RTR? Add a battery and paint the body, and the International is ready to go with its included Airtronics radio gear and reversing ESC.

- Airtronics Blazer radio system.
 - M-Tronics forward-and-reverse ESC.
 - Andy's Accord body.
 - Threaded shock bodies.
 - Pre-glued tires.
 - Carbon-fiber chassis.
 - Ball bearings.
- Call for price information.



AIRTRONICS 94755Z Digital Servo

With its 8 oz.-in. of torque and .11-second transit time, the 94755Z should be a top performer, and will undoubtedly feature greater holding power and finer resolution than Airtronics' "regular" servos. Naturally, Airtronics' universal "Z" connector will be supplied.

Part no. 94755Z; \$159.99.

ASSOCIATED RC10T3 Ready to Run

The championship-winning T3 is now offered as a turn-key truck complete with Hitec radio, 20-turn motor and genuine LRP Runner electronic speed control. The T3 RTR even includes a painted Pavidis-style body. Even if you can't drive your car like Mark, you truck can look like his!

- Fully assembled; just install AA batteries in radio.
 - Full parts compatibility with all RC10T3 kits and hop-ups.
 - LRP Runner electronic speed control with reverse.
 - Painted, trimmed body.
 - Hitec Lynx Sport radio.
- Part no. 7010; \$359.95.



KYOSHO

FW-04 4-stroke SuperTen

Here's the 4-stroke version of Kyosho's latest SuperTen chassis, and the kit includes an O.S. FS-26 4-stroke engine plus cooling fan, special clutch shoes and clutch bell, tuned muffler, 100cc fuel tank, 3mm chassis and sealed radio box. The kit will be offered with a selection of bodies.

Part no. KYOC0355 (Castrol Supra), KYOC0356 (McLaren BMW), KYOC0357 (Castrol Mugen); \$499.99.

NOVAK Ionic AC/DC Charger

At last!—a plug-in charger from Novak. At first glance, you might think the Ionic doesn't look that high-tech because there isn't an LCD screen, but this is a trick charger. The buttons on the front let you quickly program it to suit your charging needs, and LEDs confirm the settings. Here's what you'll punch in:

- Nickel-metal-hydride or Ni-Cd mode. The Ionic was designed from the start to handle NiMH cells, and it uses a constant linear charge—no pulsing.
 - Amp rate. You can select 0.5, 1 and 3.5A charge rates to juice up all your rechargeable packs safely.
 - Number of cells. The Ionic can be set to charge 4, 5, 6, or 7 cells.
- Of course, its best feature is its convenience: just plug it into a wall socket. Part no. 4475; call for price, look for it in hobby stores in spring 2001.



CEN Fun Factor RTR Nitro vehicles

CEN makes its first venture into off-road with these unique 2WD ready-to-run machines. The stadium truck, monster truck, rally and buggy all feature:

- Pivot-ball suspension.
 - Sealed radio box.
 - CEN .16 pull-start engine.
 - Ball bearings.
 - Purple-anodized chassis.
 - Gear diffs and oil-filled shocks.
- Call for price information.



DURATRAX IntelliPeak Pulse Chargers

DuraTrax has four chargers in its IntelliPeak line: Pulse, Digital, Deluxe and Mini. All feature:

- NiMH and Ni-Cd compatibility.
- Built-in dischargers.
- Pulsed fast-charge current.
- Cycling modes.
- Adjustable fast-charge amperage.
- AC/DC.
- "High-intensity" LED and sound cues.
- Overload and reverse-polarity protection.
- LCD display on Digital model.

Part no. DTXP4100 (Pulse), \$99.99; DTXP4130 (Digital), \$159.95; DTXP4110 (Mini), \$99.99; DTXP4120 (Deluxe), \$119.99.



DYNAMITE Ready Start "RTR" Starter Box

Dynamite's popular Starter Box now comes assembled and can be used for 1/8- and 1/10-scale on- and off-road vehicles. Power for the Ready Start can come from two 6-cell, 7.2V packs or one 12V gel-cell battery. The box also has storage space for glow plugs and body clips.

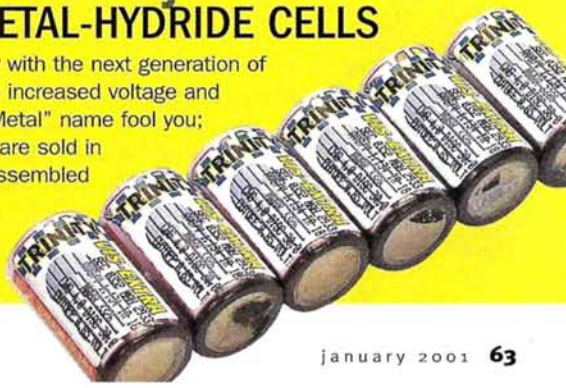
Part no. DYN5610; \$74.95.



Punchier Power from Trinity PANASONIC STOCK METAL-HYDRIDE CELLS

Stock racers in particular should be happy with the next generation of Panasonic cells, which are claimed to have increased voltage and longer run times. But don't let the "Stock Metal" name fool you; you can run the new cells in mod too! They are sold in 4- and 6-cell packs and assembled and unassembled matched packs.

Various part nos. for 4- and 6-cell Racer Spec and Team Spec packs; \$90 to \$144.



2001

AN RC ODYSSEY

Team Losi DIRT SPEC TRIPLE-X AND TRIPLE-XT

You can play with the blue-tire buggy and truck all day long, but Team Losi hopes you'll do a little dirt-spec racing with them. The blue tires are class standard, so there isn't any rubber war in the pits, and the Dirt Spec cars can easily be upgraded later to full racer mode.

- Triple-X transmission with Teflon-sealed bearings and slipper clutch.
- Stiffezell chassis and suspension components.
- Blue front bumper, rod ends and Dirt Spec tires.
- Telescoping universal-joint drive axles.
- And they're fully compatible with Team Losi and aftermarket Triple-X parts.

Part no. A-0002 (Dirt Spec Triple-X), A-0006 (Dirt Spec Triple-XT); call for price information.



SHOW
STOPPER

KO PROPO Special Edition EX-1 Mars

KO plans to release only 2,000 of these black-and-gold beauties, and about 300 will be earmarked for the U.S. In addition to the blackout case, the transmitter features a vivid blue LED (trust us; it's cool), dropped wheel and engraved gold identification plate with serial number. All the software is the same as that on the standard Mars.

Part no. 90006; call for price information.



TTR Evo .21 and Evo .12

TTR's competition .12 engine features a new carburetor design, a compact pull-starter (also available without a pull-starter), new-style heat-sink head and competition piston and sleeve, while TTR's totally new EVO .21 racing engine packs in the following:

- NovaRossi piston and chrome sleeve.
- Totally new carb design with interchangeable inserts.
- Easy-access Allen-head mixture-adjustment screws.
- Large heat-sink head to manage engine heat more efficiently.
- Available in long- and short-stroke versions.

Call for price information.



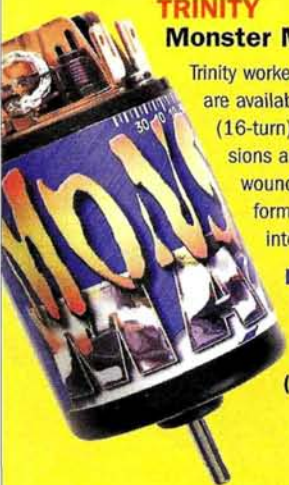
MAXX STUFF!

Right now, the Traxxas T-Maxx and E-Maxx ("First Looked" in the December issue) seem to be driving the entire RC biz; everybody has parts and accessories for these trucks. Here are some of the best:

TRINITY Monster Maxx Modified motors

Trinity worked with Traxxas on the big 550 mods, which are available in three versions: Mild (19-turn), Wild (16-turn) and Pro (10-turn). The Mild and Wild versions are machine-wound, while the Pro is hand-wound and epoxy-balanced for maximum performance; and to think you'll bolt two of these into your E-Maxx!

- Adjustable timing.
 - Integrated, surface-mount capacitors.
 - Redesigned 550-size armature.
- Part no. 9421(Mild), 9422 (Wild), 9421 (Pro); \$69.99.



PRO-LINE Outback wheel

With their 18-wheeler looks and deep chrome finish, Pro-Line's Outback wheels are sure to be favorites. The design is licensed from Weld, and the tire shown is Pro-Line's Maxx Masher.

Part no. 2656-01 (chrome), 2656-04 (white); call for price information.

CVEC Rear-exhaust tuned pipe

This pipe looks awesome and realistically vents exhaust gases out through the rear of the truck. CVEC also claims increased power compared with the stock setup, thanks to the unique tunable pipe design. Aluminum mounting brackets and header are included.

Part no. TM-03; \$38.95.

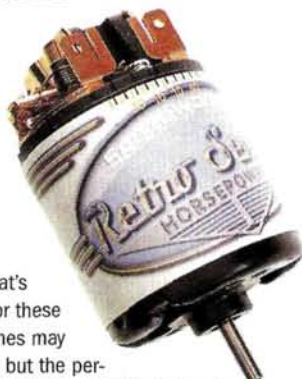




BOLINK '56 Ford for T-Maxx

Bolink's nostalgic truck shell includes window masks and decals, and will definitely set your T-Maxx or E-Maxx apart from the other guys'. A new Chevy Avalanche shell is also available (not shown).

Part no. BL 2231('56 Ford), BL2232 (Avalanche); \$19.95.



TRINITY Speedworks "Retro Series" Modifieds

"Old friends; new technology." That's Trinity's line, and it's a good fit for these nostalgia-tinged motors. The names may hearken back to the heady '80s, but the performance and features of the 427 (10-turn), 350 (11-turn), Pure Gold (12-turn) and Monster Mash (13-turn) are cutting-edge. For instance:

- All feature HVS "split wind doubles" with one "big" and one "small" wire for quicker acceleration and spool-up.
- Adjustable timing and ball bearings.
- Surface-mounted capacitors—no soldering.

Part no. 9426/9247 (Green Machine 3 Standard/Pro), 9234 (427), 9235 (350), 9236 (Pure Gold), 9237 (Monster Mash); \$59.99.



RPM T-Maxx arms

These heavy-duty Maxx arms are beefier than stock and available in purple and blue as well as stealthy black. The RPM arms retain stock geometry while increasing strength (and enhancing appearance, if you go for colors).

Part no. 80262 (black), 80265 (blue), 80268 (purple); \$10.95/2-piece set.

TRAXXAS CNC motor plate and battery hold-downs

The CNC'd motor plate isn't just for looks; Traxxas says it's actually designed to exploit the fan action of the E-Maxx's motors by providing a computer-engineered path for the airflow to maximize cooling. The engraved aluminum battery hold-downs are scalloped on one side and flat on the other to accommodate side-by-side packs as well as sticks.

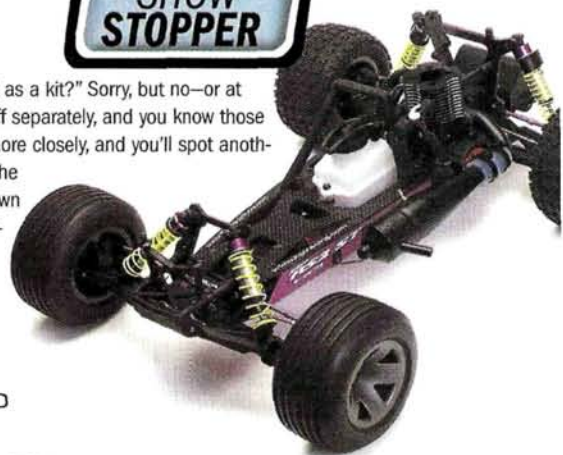
Call for price information.



HPI Rush full option

We know what you're thinking: "Can I buy that as a kit?" Sorry, but no—or at least not yet. But you can buy all the trick stuff separately, and you know those graphite top decks will go fast! Look a little more closely, and you'll spot another neat item: steering bellcranks. Looks as if the Rush is getting racier! Other go-fast parts shown include aluminum-body Super Shocks, universals, tuned springs and turnbuckles.

Call for price information.



PRO-LINE Silverado Crew Cab for E-Maxx

Well, if you wanted to get creative, you could trim out the T-Maxx's crew cab, but Pro-Line's latest Silverado is meant just for the Big E. Window masks and decals are included, as usual.

Part no. 3100-00; call for price information.



KEYENCE Zero V Extreme

The Zero V Extreme has the friendliest user interface we've seen; it even says "Hello" when you turn it on! The LED screen literally spells out which feature is being adjusted, and the numeric display with "bar graph" makes it easy to see where your settings are.

Call for price information.



XTM MAXX WHEELS

There's always room for more Maxx wheels! These 3-spokers may be bolted directly to the Maxx without using the hex hub: just slide them directly onto the axles' crosspins.

Part no. 233180; \$59.95/pair.



ROBINSON RACING SHOCK PARTS

Rob Robinson is a busy dude; he just turned out these new aluminum parts for Traxxas' Maxx machines. The blue and silver aluminum shock bodies are CNC machined and sold in pairs, and the blue and silver aluminum spring perches are available in 8mm and 4mm sizes.

Part no. RRP8511/8510 (shock bodies, blue/silver); RRP8516/8515 (blue/silver spring perches); call for price information.



2001

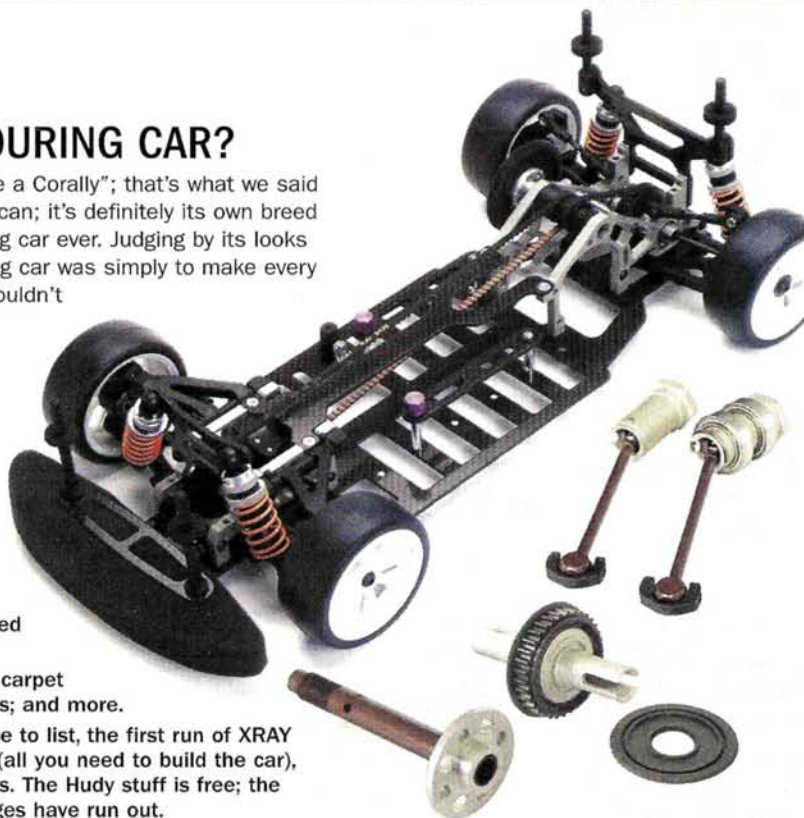
AN RC ODYSSEY

XRAY T1

IS THIS THE WORLD'S BEST-BUILT TOURING CAR?

You're excused if your first impulse is to say, "Oh, it looks like a Corally"; that's what we said at first. Do yourself a favor, and check out the T1 when you can; it's definitely its own breed of machine and is arguably the highest-quality electric touring car ever. Judging by its looks and features, it seems XRAY's strategy to build the ultimate touring car was simply to make every part as perfect and precise as possible so that the finished car couldn't help but be perfect. Here are some of its high points:

- Overall quality: everything on the T1 is beautifully finished, and not just in the cosmetic sense; many parts are hard coated, heat treated, or otherwise processed for maximum performance.
- Hudy spring steel components: Hudy has been producing spring steel parts for Serpent cars for some time, and XRAY makes good use of Hudy's expertise with the material. Spring steel's resilience makes it ideal for the drive axles, layshafts and other selected parts, and the material's strength means less of it is required, so weight is saved.
- Total adjustability: the XRAY's wheelbase, caster, camber, anti-squat, anti-dive (front arm kick-up) and toe can all be easily adjusted without disassembly.
- More features, such as labyrinth-sealed diffs that keep dust and carpet fibers out; no-loose-pieces battery straps; tiny, lightweight universals; and more.
- Bonus stuff: in addition to the other features we don't have space to list, the first run of XRAY T1s will include a "Hudy Bonus Package" with five Hudy wrenches (all you need to build the car), droop gauges, setup-board calibration decal and Hudy setup gauges. The Hudy stuff is free; the T1's suggested price of \$329 won't change after the Bonus Packages have run out.



TEAM ORION EZ-Startup Kit

There are lots of nitro starter sets out there, but electric beginners have had to piece together their support gear—until now. Orion's EZ-Startup Kit comes complete with a D47 Peak Charger, 23-turn Pilot motor, 1500mAh Sport Pack and an active discharge device.

Part no. 45000; \$110.



Tamiya TB EVOLUTION CHASSIS KIT

If you were planning to buy every Tamiya hop-up for your TB-01, you might just want to hold tight for the TB Evo kit; it includes all the go-fast gear, including:

- Carbon-fiber upper and lower decks and shock towers.
- TGR differentials.
- Shaft-driven 4WD system.
- TRF super-low-friction dampers—and much more.

Tamiya anticipates a November release, but don't wait around when it comes out; the Evo kits will have only a limited release.

Part no. 58267; list price \$647.

MEGATECH Nitro Razor RTR

The Razor features shaft drive and a 2-speed transmission, plus:

- Adjustable oil-filled shocks with powder-coated springs.
- Racing-compound radial tires and lightweight wheels.
- Ball bearings.
- Front and rear anti-roll bars.
- Megatech .15 engine with recoil starter.
- Painted and trimmed body.
- Installed Hitec Lynx radio.

Part no. MTC4200; call for price information.



2001

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KYOSHO

Mini-Z Audi TT and BMW Z8

These are the latest versions of Kyosho's popular direct-drive 1/28-scale Mini-Z micro cars. The cars include transmitters and receiver/ESC units plus highly detailed "hard" bodies. Other kits include Skyline, Subaru and BMW sedan bodies.

Part no. KYOD51 (BMW Z8), KYOD53 (Audi TT); \$219.95.



TRINITY

Team Pro Wrenches

The Team Pro tools have a very businesslike anodized finish, comfortable triangular handles and durable, replaceable precision tips. All popular metric and standard hex sizes will be offered, as will Phillips-head and carb-tuning screwdrivers.

Part number varies according to size; \$10.99 to \$11.99 each.



JR RACING

Digital Ultra Torque Servo

The D28550 digi-servo features alloy metal gear trains plus doubled output-shaft-bearing spacing to reduce radial free play and wear. JR claims 188 oz.-in. of torque and a 0.15-second transit time, plus enhanced reliability, thanks to new, high-temp motor epoxies.

Part no. JRP S2 8550; \$114.95.



MIP

On-Board Temp 2

The Temp 2 may be attached directly to your engine's head for accurate, consistent temp readings. New features include an off/on button, Fahrenheit/Centigrade button and clean Lexan splashguard.

Part 2001; \$48.



Sticky Stuff

*Now Available, The Same
Glue Brian Uses To Put
His Multi-Stage Inserts
Together And To Glue His
Tires-To-The-Rim!*



www.teamtrinity.com

TEAM Kinwald TRINITY

TAMIYA Tyrell P34 6-wheeler

The blue-and-white "hard" body is nostalgic (and authentically re-created from the original molds), but the 6-wheel chassis underneath is all new, so you can play as hard as you like. With the exception of the simplified double-axle front end, the chassis is basically a standard F-103. The required non-standard battery pack shown here is included.

Part no. 49154; list price \$347.

MUGEN MBX-4 XR

The XR will be a full-option version of the MBX-4 RR, but Mugen hasn't yet released the official list of upgrades or price information. You can probably count on a hard-anodized chassis, universals all around, aluminum center diff mounts, sealed bearings, machined engine mounts, additional chassis bracing and some graphite parts, but that's just our guess.

Call for price information.



How Fast? TEAM ORION SPEED SERIES

The Speed Series concept should appeal to all speed freaks. Each motor is labeled for miles per hour! Want to go 50? Buy the 50mph model! Each motor includes all the info regarding which car and gearing setup it used to achieve the indicated speeds. No specs, part numbers or prices yet, but expect 30, 40 and 50mph versions.

Call for price information.

SHOCKING NEWS!

**The Choice Of Matt Francis, Brian Kinwald
David Spashett, Josh Cyrul & Barry Baker**

Available in 10-15-20-25-30-35-40-45-50-55-60-70-80-90-100
Plus the following "1/2 Weights" 27.5-32.5-37.5-42.5

**1/2 Weights....The Idea So Good
The Competition Had To Steal it**

\$3.50

100% Pure Silicone
Blended According To The General Electric
Blending Chart. Blended By Volume to a
Tolerance of .001% Or Less!

The Champion's Choice



**TRINITY 40 Weight
Front & Rear**



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Most Exotic On-Road Ever!

SERPENT VETEQ

Is this not the wildest nitro car you've ever seen? Check out the cantilevered shocks with their sinister-looking bellcrank actuators, and the multi-piece "monocoque" chassis: this thing is killer. The Michael Salven-designed machine includes a Serpent NovaMega SX21 engine, Centax clutch, carbon-fiber radio tray and externally adjustable shocks. But there's more to the VETEQ than the car itself: when you buy and register your VETEQ, you're sent a VIP card that entitles you to "... extra-special service that no other brands offer." Expect a review in *RC Nitro* magazine.

Call for price information.

OFNA

Pirate Hyper 7

The newest addition to OFNA's line-up of 1/8 off-road buggies is the race-ready Hyper 7. It's loaded with racing features but its best one is that it is built at the factory and has the radio gear and engine installed. You can take the car from the box to the track in a matter of minutes.

- Pirate Hyper .21 engine.
- 4mm hard-anodized chassis.
- Front and rear chassis stiffeners.
- CVA universals.
- Aluminum shocks.
- Quad brakes.

Part no. 1440; \$699.



MIP

Kyosho MP 7.5 accessories

New MIP accessories for the MP 7.5 include CVD drive shafts, a high-performance clutch and precision-machined, hard-anodized shock bodies. The clutch features high-grade composite material and a precision clutch spring.

Part no. 1521(front shock bodies), 1522 (rear); \$55; 1515 (front/rear CVD/pair), 1516 (center CVD/pair), \$60; 1523 (clutch system), \$19.95.

TECH BREAKTHROUGH

TAMIYA

BL Battle System Tanks

These were one of the show's big hits—as in big Howitzer hit! The "battle system" may be installed in Tamiya's 1/6 RC tanks and uses an array of sensors to register hits and damage as tanks photo-electronically "shoot" one another without firing any "real" projectiles. The combat still looks real, though, thanks to muzzle strobos, recoil action and even blazing LED machine-gun fire! Different settings tailor the sensitivity to damage to suit heavy, medium and light tanks.

Part no. 53447; call for price information.

TECH BREAKTHROUGH



NOVAK

Cyclone C2 and TC2

The latest generation Cyclones have very interesting convenient features and updated profiles. Here's what you get:

- Plug-in input harness: if you need to replace the C2/TC2 harness, simply unplug it—no manufacturer service required. Novak will sell harnesses in a variety of lengths to suit many vehicle types.
- Built-in on/off switch: the one-touch setup button doubles as an on/off switch, so there's just one less thing to worry about (and you'll save yourself a little square of servo tape).
- Usual Novak good stuff, such as Polar Drive capacitor cooling, low on resistance and three selectable profiles (touring-car-specific in Cyclone TC2), plus the option of creating your own profiles with the Pit Wizard. Both Cyclones will feature updated profiles, and you can look for them in hobby stores in summer 2001.

Part no. 1775 (Cyclone C2), 1777 (TC2); call for price information.



2001

AN RC ODYSSEY

TEAM ORION

Thunder Designs Pro Concept Decals

These are the latest designs in Orion's stick-on-and-spray series of decals. In addition to looking really, really good, the decals are scratch- and scuff-proof, since they're applied to the inside of the body before it's painted. Each style of Pro Concept decal is available in four color combinations.

Call for price information.



TTR

EB-4 Limited

This is the full-option version of TTR's top 1/8-scale buggy. No tally of all the features yet, but the car will definitely have a 707 aluminum chassis and shock towers, three sets of tuning springs, and competition red anodizing on all aluminum parts.

Part no. 6202; list price \$799, street price \$649.



TTR

TS-4n Pro Kit

TTR's TS-4n gets the pro treatment with this full-option version that includes all of the following:

- 3mm chassis.
- Carbon-fiber upper deck and shock towers.
- Full bearing set.
- Champion tires.
- 2-speed transmission.

Part no. 6190; list price \$229.99, street price \$209.99.



BOLINK

Extra-narrow Pro Stock bodies

Bolink's new line of extra-narrow Pro Stock bodies includes the 2000 Mustang Pro Stock, the Camaro Pro Stock and the S-10 Pickup Pro Stock. They are all designed to fit Dragmaster, Bolink and other Pro Stock kits, and all are approximately 7 inches wide (178mm) for less frontal area to decrease elapsed times. All include rear wings and window masks.

Part no. BL2230 (Mustang), BL2228 (Camaro), BL2229 (S-10); \$19.95.



MRC

SP3 X and XT

The 1/10-scale, wedge-bodied SP3X and touring-flavored SP3 XT use similar, direct-drive chassis with adjustable, pan-car-style front suspensions and tube-damped T-plate rear ends. A wiper speed control and 540 motor are included with each and may be offered in similar RTR packages as the SP3 Extreme (our guess).

Call for price information.



No more Crystals!

NOVAK XXTRA WITH DIAL-A-FREQUENCY TECHNOLOGY

The XXtra is missing a big hole for the crystal because there is no plug-in crystal. The two dials are used to select a synthesized FM frequency, so all you need to do is match it to your transmitter frequency. The XXtra features proven XXL circuitry, low-voltage operation (just 3 volts!) and solid-state reverse-voltage protection. Now that radios are starting to use the same frequency-synthesizer technology (namely, Hitec's Lynx 3D with Spectra module), you may not have to carry spare crystals around much longer! The XXtra should be available in March 2001.

Part no. 2627 (27MHz), 2675 (75MHz); \$165.

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YOKOMO MR-4 TC 2001 Models

The versatile MR-4 TC returns for 2001 in Pro, "R," and Worlds Replica versions. The Replica is essentially the same machine as Atsushi Hara used to win the ITC Worlds (covered in this issue); it includes the Yokomo factory upgrades Hara used on his winning car. The "R" model adds a body to the standard MR-4 TC package.

Part no. MR4TC-W (Worlds Replica), \$475; MR4TCP (Pro), \$380; MR4-TC R, \$289.



PARMA Gangstar

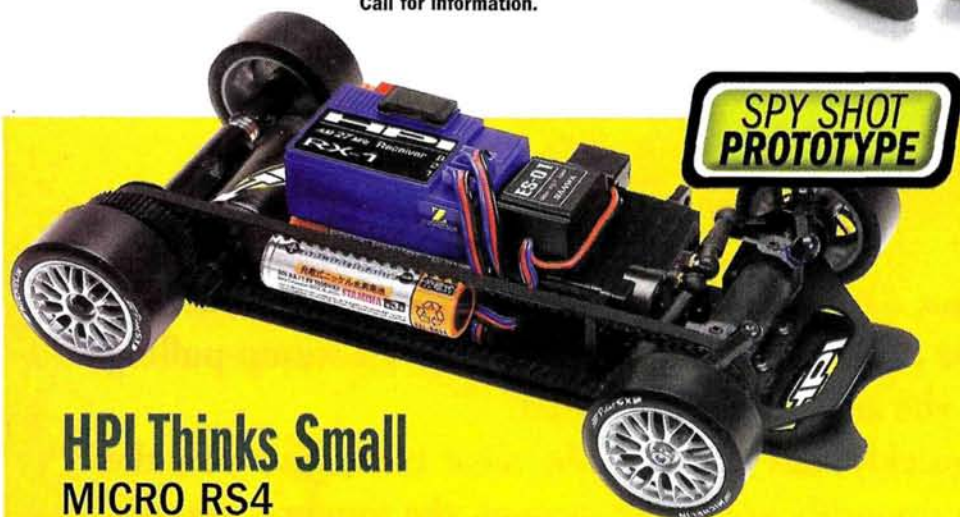
Do we really need to say anything about this beautiful rod other than "Check it out"? I guess we could add that it fits all 200mm chassis and includes window masks.

Part no. 10152, \$23.99.

MRC STR-4 II Pro, Sport

The updated STR-4 could be a real sleeper hit! The Sport features a fiberglass chassis, while the Pro is graphite; both chassis are slotted for side-by-side packs. Likewise, both cars use conventional hinge-pin suspension systems, but the Sport is equipped with plastic shocks while the Pro gets threaded aluminum pieces. Factor in nice little touches such as transponder mounts, turnbuckles and foam bumpers, and it looks as if MRC could have a pair of capable racecars (or very nice play cars).

Call for information.



HPI Thinks Small MICRO RS4

The rough prototype shown here is basically a three-dimensional sketch, but the concept is clear enough: this is a 4WD, 1/18-scale chassis that accepts full-size electronics and runs on standard AA Ni-Cds. Clear bodies will be offered, and we bet there will be a radio-included version or RTR to come.

Call for price information.



TAMIYA Expert-Built Ford SVT F-150 Lightning

Tamiya doesn't simply claim the Lightning is ready to run: it's Expert Built. Painting and decaling is taken care of for you, and an Adspec-by-Futaba radio is included and installed. Since there's a TL-01 chassis under the bodywork, you can count on nimble sedan handling and amazing ruggedness.

Part no. 57702; list price \$312.

XTM .15

The new XTM .15 has a dual-bearing crankshaft and true ABC (aluminum piston, chrome-plated brass sleeve) internals. A "standard" XTM with square heat-sink head and rotary carburetor will be offered, as will a "race" XTM with round head and slide carb, as shown here (with optional pull-starter).

Call for price information.



We have a lot more gear to show you, so keep your eyes on Inside Scoop, Racer News Speed Shop, Product Watch, and the rest of the mag—we'll be covering it all. You can also click over to www.rcraction.com, where we've posted photos and info for many other new items. See you there!

2001

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Featured Manufacturers

Ace Hobby Distributors, Inc. 116 W. 19th St., Higginsville, MO, 64037-0472; (660) 584-7121; fax (660) 584-7766; www.acehobby.com

Airtronics, 1185 Stanford Ct., Anaheim, CA 92805; (714) 978-1895;

fax (714) 978-1895; www.airtronics.com.

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626-1403; (714) 850-9342; fax (714) 850-1744; www.rc10.com; www.teamassociated.com.

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30045; (770) 963-0252; fax (770) 963-7334; www.bolink.com.

CEN; distributed by Genka Trading Corp., 1800 East Miraloma Ave., #F; Placentia, CA 92870; (714) 792-1923; fax (714) 792-1968; sales@cenracing.com; www.cenracing.com.

CVEC Inc., 380-E N. Wickham Rd., Melbourne, FL 32935; (810) 226-9250; fax (810) 226-9259; www.innoventive.com.

Competition Electronics, 3469 Precision Dr., Rockford, IL 61109; (815) 874-8001; fax (815) 874-8181; www.competition-electronics.com.

Competition Products, Inc., 8740-24 Cherry Ln., Laurel, MD 20707; (301) 498-0850; fax (301) 498-9329.

Corally R/C B.V., distributed by Specialized R/C International, Inc.

Dreier Racing, 1015 E. Semoran Blvd., Casselberry, FL 32707; (407) 261-0496; rc89@email.msn.com.

DuraTrax; see Great Planes.

FMA Direct, 9607 Dr. Perry Rd., Unit 109, Ijamsville, MD, 21754; (301) 831-8980; fax (301) 831-8987; frerd@fmadirect.com.

Global Hobby Distributors, 18480 Bandilier Cir., Fountain Valley, CA 92728; (714) 964-0827; fax (714) 962-6452; www.globalhobby.com.

Great Planes Model Distributors, 2904 Research Rd., P.O. Box 9021, Champaign, IL 61826-9021; (800) 682-8948; fax (217) 398-0008. www.greatplanes.com

GS Racing, distributed by General Silicones Co., USA; 650 W. Duarte Rd., Ste. 205, Arcadia, CA 91007; (626) 445-6036; fax (626) 445-6084; gsusa82.com; www.gsweb.com.tw.

Hitec RCD, Inc. 12115 Paine St. Poway, CA 92064; (858) 748-6948; fax (858) 748-1767; w3hitecrd.com

Horizon Hobby Distributors, 4105 Fieldstone Rd., Champaign, IL 61821; (217) 355-9511; fax (217) 352-0355; www.horizonhobby.com.

HPI, 15321 Barranca Pky., Irvine, CA 92618; (949) 753-1099; fax (949) 753-1098; www.hpiracing.com.

Hudy Special Products, see Serpent Inc. USA.

JR Racing, distributed by Horizon Hobby Distributors.

Keyence, 1-3-14 Higashinakajima, Higashiyodogawa-ku, Osaka, 533-8555 Japan; 81.6.6325.6665; fax 81.6.6379.1190; masudak@keyence.co.jp.

KO Propo, 16012 S. Western Ave., Gardena, CA 90247; (310) 532-9355; fax (310) 532-9354; info@kopropo.co.jp.

Kyosho, distributed by Great Planes.

MIP, 830 W. Golden Grove Way, Covina, CA 91722; (626) 339-9008; fax (626) 966-2901; www.miponline.com.

Megatech, 8300 Tonnelie Ave., North Bergen, NJ 07047; (201) 662-8500; fax (201) 662-1450; info@ahcmegatech.com; www.megatechrc.com.

Model Rectifier Corp., 80 Newfield Ave., Edison, NJ 08837; (732) 225-2100; fax (732) 225-0091; mrcrc@aol.com; www.modelrec.com.

Mugen Seiki Racing Ltd. 20914 Bake Pkwy., Ste. 106, Lake Forest, CA 92630; (949) 707-5607; fax (949) 707-5614; support@mugenracing.com.

Novak Electronics, Inc., 18910 Teller Ave., Irvine, CA 92612; (949) 833-8873; fax (949) 833-1631; tyree@teamnovak.com; www.teamnovak.com.

OFNA, 22692 Granite Way, Ste. B, Laguna Hills, CA 92653; (949) 586-2910; fax (949) 586-8812; www.ofna.com.

Parma Intl. Inc., 13927 Progress Pky., North Royalton, OH 44133; (440) 237-8650; fax (440) 237-6333; info@parmapse.com; www.parmapse.com.

Pro-Line USA, 201 W. Lincoln St., Banning, CA 92220; (909) 849-9781; fax (909) 849-2968; pro-lineracing.com.

Robinson Racing Products, 4968 Meadow View Dr., Mariposa Calif. 95338; (209) 966-2465; fax (209) 966-5937; www.robinsonracing.com.

Robitronics, distributed by Trinity Products, Inc.

RPM R/C Products, 14978 Sierra Bonita Lane, Chino, CA 91710; (909) 393-0366; fax (909) 393-0465; feed-back@rpmrcproducts.com; www.rpmrcproducts.com.

Schumacher Inc., 6302 Benjamin Rd., Ste. 404, Tampa, FL 33634; (813) 889-9691; fax (813) 889-9593; schumacheruse@mindspring.com; www.racing-cars.com.

Serpent USA Inc. 2823 NW 79 Ave., Miami, FL 33122; (305) 639-9665; fax (305) 639-9658; info@serpent-usa.com; www.serpent.com.

Specialized R/C International, 1480 S.R. 436, Casselberry, FL 32707; (407) 681-5905; fax (407) 681-5906; rmicheal@src.com

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656; (949) 362-2240; fax (949) 362-2250; www.tamiya.com.

Team Losi Inc. 13848 Magnolia Ave., Chino, CA 91710; (909) 465-9728; fax (909) 590-1496; www.teamlosi.com.

Team Orion, 22601 East La Palma, #103, Yorba Linda, CA 92887; (714) 694-2812; fax (714) 694-2815; www.team-orion.com.

Traxxas Corp., 12150 Shiloh Rd., Dallas, TX 75228; (972) 613-3300; fax (972) 613-3599; www.traxxas.com.

Trinity Products, 36 Meridian Rd., Edison, NJ 08820; (732) 635-1600; fax (732) 635-1640; www.teamtrinity.com.

TTR, distributed by Ace Hobby Distributors.

XRAY, distributed by Serpent

XTM, distributed by Global Hobby Distributors.

Yokomo, 17951 Sky Park Cir., #K, Irvine, CA 92660; (949) 252-8663; fax (949) 252-8657; www.yokomousa.com.



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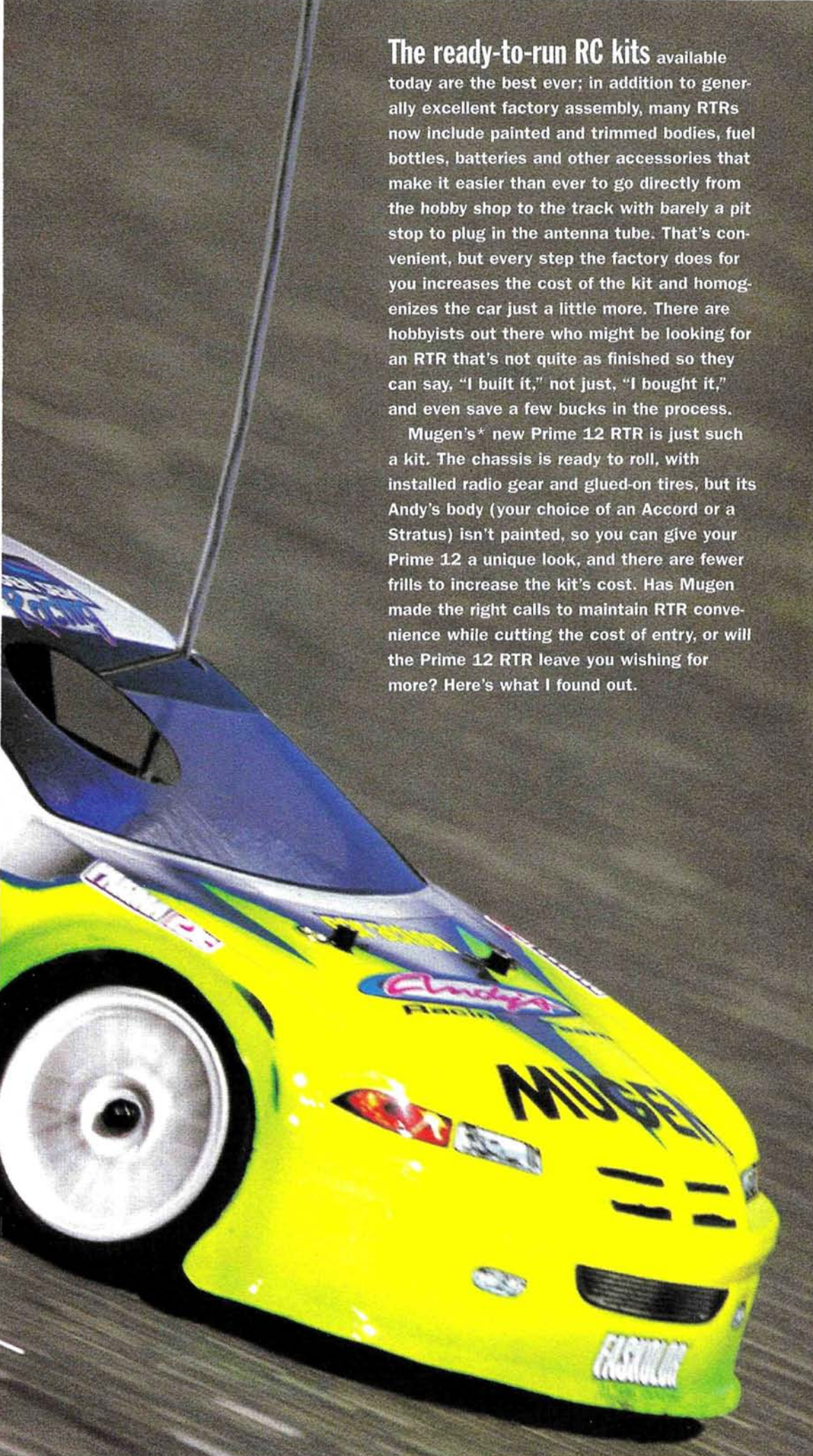
**TRACK
TEST**
1/10-SCALE NITRO



Mugen Prime 12 RTR

Mugen's shaft-drive tourer takes
on the ready-to-runs

by Peter Vieira



The ready-to-run RC kits available today are the best ever; in addition to generally excellent factory assembly, many RTRs now include painted and trimmed bodies, fuel bottles, batteries and other accessories that make it easier than ever to go directly from the hobby shop to the track with barely a pit stop to plug in the antenna tube. That's convenient, but every step the factory does for you increases the cost of the kit and homogenizes the car just a little more. There are hobbyists out there who might be looking for an RTR that's not quite as finished so they can say, "I built it," not just, "I bought it," and even save a few bucks in the process.

Mugen's* new Prime 12 RTR is just such a kit. The chassis is ready to roll, with installed radio gear and glued-on tires, but its Andy's body (your choice of an Accord or a Stratus) isn't painted, so you can give your Prime 12 a unique look, and there are fewer frills to increase the kit's cost. Has Mugen made the right calls to maintain RTR convenience while cutting the cost of entry, or will the Prime 12 RTR leave you wishing for more? Here's what I found out.

DATA CENTER

VEHICLE TYPE Nitro-powered, entry-level RTR 4WD touring car
BEST BUYER First-time nitro hobbyist
KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Satisfactory
Parts fit/finish Good
Durability Good
Overall performance Good

SPECIFICATIONS

SCALE 1/10
LIST PRICE \$499
STREET PRICE \$299*

DIMENSIONS

Wheelbase 10.25 in. (260.3mm)
Width 7.7 in. (195.2mm)

WEIGHT

Total, as tested 58.2 oz. (1,650g)

CHASSIS

Type Double-deck
Material Stamped 2mm aluminum with plastic upper deck

DRIVE TRAIN

Type Shaft
Transmission ratio 2.71:1
Clutch-bell/spur-gear ratio 42/15
Final drive ratio 7.58:1
Drive shafts Dogbones
Differentials Gear
Bearing type Metal bushings throughout

SUSPENSION

Type Lower H-arm with adjustable camber link
Shocks Plastic-body, fluid-damped coil-overs

WHEELS

Type One-piece plastic, "mesh" pattern

TIRES

Type Firm-compound slicks with foam inserts

ELECTRONICS

Transmitter/receiver Sanwa M7 Sport/RX-201
Servos Sanwa SX-101z

ENGINE AND ACCESSORIES

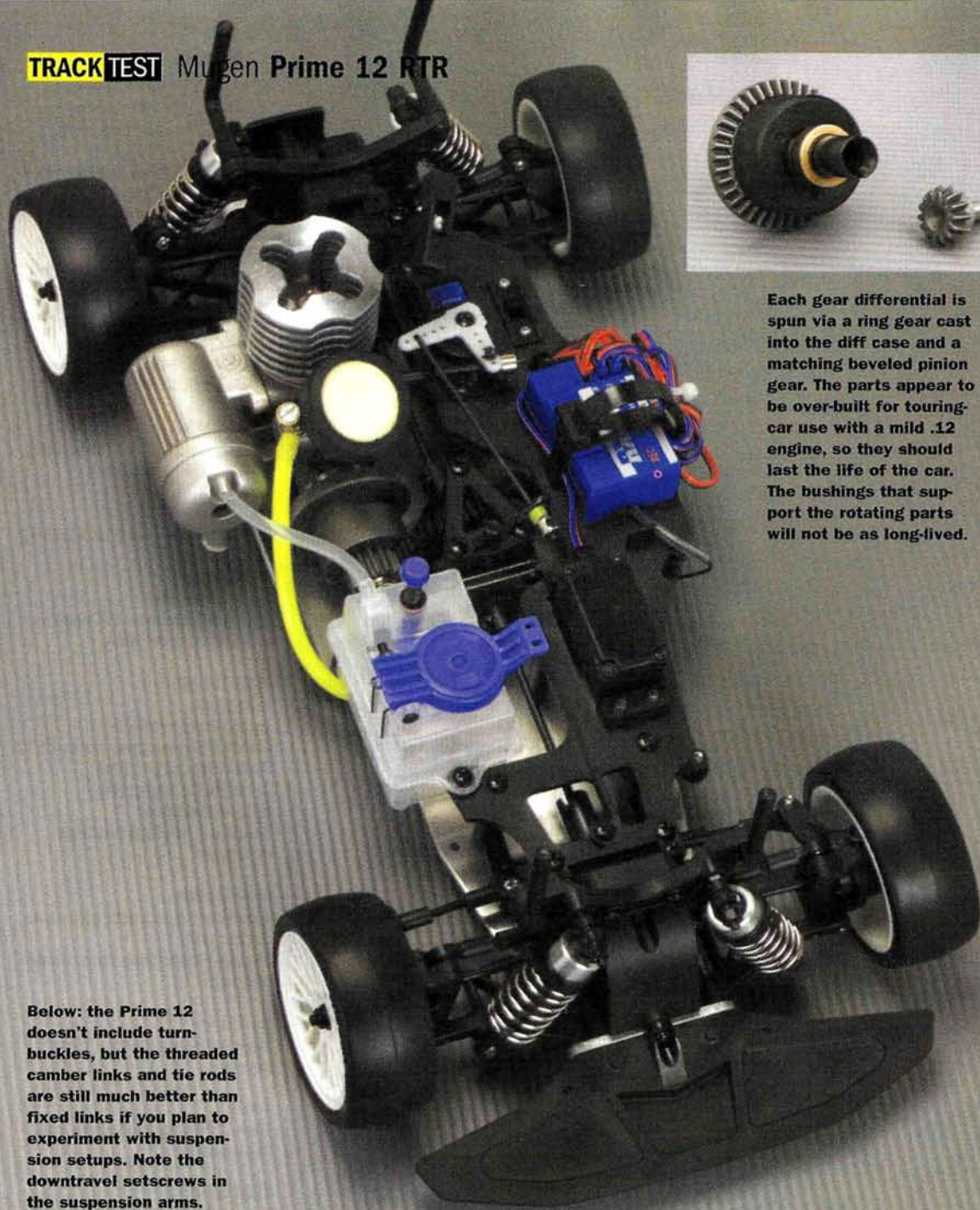
Engine Mugen VX-12
Carburetor Slide, 6mm bore
Clutch type 2-shoe centrifugal
Exhaust system Canister muffler
Fuel-tank capacity 75cc
*Price varies with purchase location

LIKES

- Shaft drive shrugs off pebbles and parking-lot junk.
- Torquey engine is geared for speed.
- Includes genuine Andy's body.

DISLIKES

- All rotating parts spin on bushings—no ball bearings.
- Restrictive muffler.
- Chassis holes are not countersunk.



Below: the Prime 12 doesn't include turn-buckles, but the threaded camber links and tie rods are still much better than fixed links if you plan to experiment with suspension setups. Note the downtravel setscrews in the suspension arms.



Each gear differential is spun via a ring gear cast into the diff case and a matching beveled pinion gear. The parts appear to be over-built for touring-car use with a mild .12 engine, so they should last the life of the car. The bushings that support the rotating parts will not be as long-lived.



Right: plastic-body shocks with clip-on preload spacers are standard. The shocks are filled with fluid at the factory. They had very little air trapped in them, and they didn't show any signs of leakage when I received the kit. Those Mugen guys built 'em right.



YOU'LL NEED ■ Fuel ■ 12 AA batteries ■ Polycarbonate-compatible paint ■ Thread-locking compound ■ 1.5V lantern battery

FACTORY OPTIONS ■ Machined-aluminum parts: front arms—part no. K01021, rear arms—K01022, hub carriers (F/R)—K01031/K01051, front steering knuckles—K01041, pull-start engine mount—K0709, non-pull-start engine mount—K0711, spur gear mount—K01071 ■ Universal drive shafts (F/R, pair)—K0216 ■ 2-speed transmission—K0240 ■ Ball-bearing set—K0605 ■ 3mm 7075 chassis—K0404 ■ Tuned pipe with manifold—K0901

building & setup tips

The Prime 12's manual is not specific to the RTR; it's the same book as is included with the partially assembled "kit" version of the car. The manual offers sound operating tips, but you'll have to get through some roughly translated English to understand them. I suggest you also check out the following before you run the Mugen Prime 12:

Check the gear mesh. My Prime 12's mesh was a little looser than I felt comfortable with. It's hard to see the mesh, so I used the ol' notebook-paper method (you know: slip a piece of paper between the spur and clutch bell, slide 'em together, tighten the screws—done). While I was at it, I noticed the engine-mounting screws hadn't been thread-locked, and that leads me to the next tip

Thread-lock the engine-mounting screws. While you're at it, hit the setscrew that holds the brake linkage, the muffler-mounting screws and the muffler through-bolt.

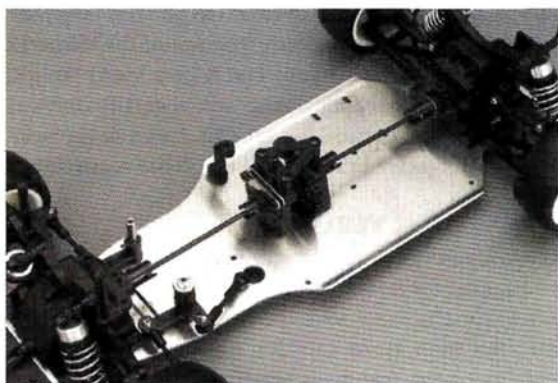
Remove the exhaust baffle. There's a giant plate inside the muffler that forces the exhaust to pass through a tiny hole in its center. The screw that holds the muffler pieces together also passes through this hole, and this further reduces exhaust flow and robs the engine of power. Removing the baffle gives the engine some legs.

Reposition the exhaust stinger. From the factory, the VX-.12 engine vents its exhaust straight down, just ahead of the right rear wheel. Needless to say, a steady spray of oily fuel residue going onto that tire's contact patch isn't the hot setup for traction. Loosen the muffler through-bolt, twist the stinger so it's parallel with the ground, and route it out through the side of the body.

Fix the fuel bottle. I'm not down with the bottle's vented filler tube. The vent allows the fuel to flow out of the bottle very quickly, but the only way to stop the flow is to tip the bottle backwards until it is lower than the filler tube. You can't do this when doing body-on fill-ups, and that leads to spilled fuel. I removed the internal vent pipe so I'd be able to use the bottle in the normal fashion: squeeze to fill, and release to stop fuel flow.

KIT FEATURES

• **Chassis.** Like many entry-level nitro touring cars before it, the Prime 12 is built on a stamped, 2mm-thick aluminum-plate chassis. The holes for the various components are not countersunk, and there are no lightening holes or any other machine work. The only openings are beneath the spur gear (for clearance and to let debris out before it lodges in the gears), beneath the flywheel (for starter-box access if you upgrade to a bump-start engine) and beneath the steering servo (for easy access to the output-shaft screw—nice touch). While the chassis is decidedly no-frills, it is solid, thanks to its radiused edges and plastic upper deck/radio tray.



The simple shaft-drive system incorporates a single disc brake. Note the radiused chassis sides; they increase the stiffness of the 2mm plate.

• **Drive train.** The original kit Prime 12 was among the first nitro tourers to buck the 3-belt trend in favor of a shaft-drive system, and the setup is particularly well suited to the RTR model; after all, shaft drives need virtually no maintenance, and if you didn't want to build the kit in the first place, chances are you don't want to work on it all that much either. The centrally mounted spur gear spins between a pair of bulkheads that it shares with a single-disc brake. The brake disc is plastic and a little on the thin side, so I'll have to keep an eye on it. Dogbones join the spur gear to the front and rear gearboxes, which house gear differentials. Each diff has two internal spider gears, and one side of the diff case is a casting that incorporates a ring gear. A beveled pinion gear drives the diff, and a drive cup outside the gearbox mates with the dogbone drive shafts. Shorter dogbones link the diffs to the hubs, and all the parts roll on metal bushings. They'll get the job done, but as the RTR market moves to bearing-equipped kits, the Prime 12's bushings represent an area for improvement.

• **Suspension and steering.** Just classic touring-car tech here: lower H-arms, hub carriers with kingpin-supported steering knuckles and threaded-rod camber links. The suspension arms are very flexible, but that's a plus on an RTR that is likely to see some first-timer abuse (or old-timer abuse, as the case may be; I plan to beat the life out of this thing). Likewise, the molded shock towers have some give, and the plastic shocks look as if they'll shrug off the curb-hopping, pothole-plowing use the Prime 12 is bound to get. Mugen fills the shocks for you, and they're well-built—no leaks or wetness around the seals, and just a little air in the damping fluid that was easy emulsify by pumping the shocks a few times.

The steering system is a traditional double-bellcrank design with a wire, Z-bend drag link (boo) and adjustable, threaded-rod steering links (yay). An adjustable servo-saver is built into the left bellcrank, but the knurled adjusting wheel is impossible to turn with the top deck in place. The servo-saver spring is relatively soft, so the Sanwa SX-101z steering servo should be well-protected, but if you plan to install stickier tires and a stronger servo later, you'll want a tighter steering system.

• **Engine and accessories.** The Prime 12 is equipped with Mugen's house-brand VX-12 powerplant. The engine features a slide carburetor, machined heat-sink



Above: The Prime 12's VX-12 engine includes a slide carburetor, which is unusual for an RTR. The thick rubber air filter boot is a cut above the parts included with many other entry-level nitro cars, but the small canister muffler is disappointing. Right: A 2-shoe clutch is hardly a surprise on an entry-level nitro kit, but the Prime 12's internally sprung shoes are an unexpected plus (and more reliable than a waist-type spring).



Sanwa M7 Sport transmitter and RX-201 receiver

The Sanwa* system is identical to the Airtronics Rival Sport. It features an LED battery meter, dual-rate steering and a concealed antenna as well as the usual trims and servo-reversing. Mugen supplies a 27-band setup, which many feel is a less glitch-prone band for nitro-car use than the 75-band.

Sanwa SX-101z steering and throttle servos

These are identical to Airtronics' 94102 standard servos. With about 40 oz.-in. of torque and a 0.22-second transit time, they're fine for touring-car duty.

Mugen vented fuel bottle

The fuel bottles I've seen included with most RTRs are at best small and, at worst, junk. Mugen includes a very nice, full-size, heavy-duty bottle with the Prime 12. The bottle has a fast-flowing vented filler tube that allows fast fill-ups but also spills easily. It isn't hard to disable the vent action (see "building and setup tips").

Clip-on glow starter

Instead of an all-in-one glow starter with integral Ni-Cd battery (or alkaline cell holder), Mugen includes a clip-on model that's attached to a lantern-type battery via long leads. A lantern battery won't fit in your pocket, but it will provide power for plenty of starts. You can get the same amount of power from any single dry-cell battery if you want something less cumbersome. I soldered up 4, 1700mAh Ni-Cd cells in parallel to power the glow starter. By wiring the cells in parallel, the voltage remains the same as for 1 cell (1.2 volts), but the pack delivers a whopping 6800mAh of capacity; that's a whole lotta starts.

THE COMPETITION

	Drive train	Bearings	Diffs	Shocks	Engine*	Painted body	Street price**	Reviewed
DuraTrax Street Force GP	3 Belt	Yes	Ball	Alum.	Torq .15 PS	Yes	\$300	9/00
HPI Nitro RS4 RTR	3 Belt	Yes	Gear	Plastic	Nitro Star .15 PS	Yes	\$300	4/99
Kyosho Alpha GP	Shaft	No	Gear	Plastic	GX-12 PS	No	\$265	11/00
Mugen Prime 12 RTR	Shaft	No	Gear	Plastic	VX-12 PS	No	\$300	01/01
OFNA Nitro Z-10 RTR	3 Belt	Yes	Gear	Plastic	Force .12 PS	No	\$290	—
Traxxas Nitro 4-Tec RTR	3 Belt	Yes	Gear	Plastic	TRX-15 ES	Yes	\$319	4/99

Cars are listed alphabetically by brand. All feature nitro power, full-time 4WD and installed radio systems. *PS = pull start; ES = electric start

**Approximate; price varies with dealer.

TRACKTEST Mugen Prime 12 RTR

head, pull starter and ABN construction (aluminum piston, nickel-plated brass sleeve). The slide carb is a welcome feature and should make for snappier throttle response than a similar engine with a rotary carb. Another plus: the carburetor has an adjustable low-end needle, so the experience you gain tuning the VX-12 engine will prepare you for any nitro vehicle to come. I was also pleased to see a screwdriver-adjustable high-end needle; this makes body-on carb tuning easy.

The VX-12's airplane-style muffler is sure to keep the Prime 12's noise level well within the neighborhood-friendly range, thanks to an enormous internal baffle, but it will do little to maximize performance. I'll remove the baffle and test to see whether the increase in noise also brings a noticeable increase in performance. A tuned-pipe set with manifold is offered as a factory option, or you can buy the manifold separately for use with another pipe; the Prime 12's right-side engine location requires the special Mugen manifold.

The Prime 12's clutch is a 2-shoe job, but instead of the usual blocky shoes with a coil spring or an O-ring wrapped around them, the Prime 12's shoes use stiff internal springs like the 3- and 4-shoe units found in competition cars. This type of shoe disengages the clutch very positively, thus reducing clutch wear.

The 75cc fuel tank that feeds the engine is equipped with a pump-type primer. This type of primer often allows air to enter the tank, and that affects mixture settings, but since this model feels well-sealed, I'll leave it in place.

• **Body, wheels, and tires.** Mugen turned to Andy's Bodies for the Prime 12's shell. You can get the RTR with an unpainted Dodge Stratus or Honda Accord body. A small sheet of headlight, taillight and grill decals is included, as are window masks. The fender wells, fuel-tank-access/engine vent and glow-starter holes are factory cut. The holes are clean, but the fender wells need extra attention because their edges are jagged.

Firm-compound slicks and mesh wheels are included. Mugen glues the slicks on for you, and it's probably the cleanest RTR glue job I've seen.

PERFORMANCE

I honestly can't remember the last time I had trouble starting any manufacturer's .12 engine, and the Prime 12's VX-12 is another two-pulls-and-it's-running powerplant. I let the engine idle through three tanks of fuel for break-in, giving it the occasional throttle blip to prevent it from loading up. Satisfied the piston and sleeve were ready for some heavy use, I got down to business and sent the Prime 12 across the parking lot. I made a few passes and leaned out the high-end needle for more speed, but the Prime 12 didn't seem to get any faster after the

first couple of tweaks. I suspected the baffle was holding the engine back, so I opened up the muffler, removed the dinner plate and went back for another run. The VX-12 had a lot more pep now, and the car accelerated more crisply and topped out with a higher top speed.

As for handling, the Prime 12 drives much like any other full-time 4WD sedan with less than grippy tires; it drifts through high-speed sweepers, understeers when pushed hard and will happily do doughnuts if you crab the wheel and punch the gas. The firm tires might bum out racing types, but for fun driving, the long-wearing treads will keep you out of the hobby shop for a while (at least, for tires), and to me, it's a lot more fun to pitch the car sideways, slide through turns, do burnouts, jump speed bumps, etc., than it is to squirt around a parking lot with maximum grip.

Now you know what the Prime 12 can do on pavement, but the best thing about the Prime 12 is what it *doesn't* do, and that's chew up drive belts—because they're aren't any. The shaft drive lets you run tank after tank without having to stop to pebble-pluck. The rest of the Prime 12 seems as hearty as the drive system. I launched it over speed bumps, dropped off sidewalks, hit the occasional curb and generally drove as hard as I could—just as most potential buyers will. I scarred the non-countersunk chassis screws pretty heavily, but I didn't break anything.

THE VERDICT

The Prime 12 RTR is a very solid, reliable ready to run, but I think it could be better equipped for its price; similar RTRs include painted bodies and bearings for the same amount of cash (see the feature comparison chart). But then, those cars don't have shaft drive and, in my book, that important feature is worth a little extra. If you bought an RTR because you don't want to build, then you probably don't want to take the car apart very often either. Shaft drive is virtually maintenance-free, so that's a plus. As for the Prime 12's clear body ... well, whether that's a plus or a minus depends on you. I like the idea of having a unique paint job that I created myself; it makes a car more personal and lets me say, "I did that." On the other hand, some guys can't stand painting or just want to drive *right now* and can't wait for even a one-color paint job to dry. You know where you stand on that one, so you make the call.

Here's the big picture: there are some very good RTR nitro touring choices out there, and the Prime 12 is one more worth checking out. It's well-built, tough and fun to run, and there's the bonus of shaft drive and the very popular Andy's Accord or Stratus body. Choosing a nitro touring RTR isn't easy, but picking the Prime 12 RTR definitely won't be a mistake.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■

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WWW.AAAModel.com



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**TRACK
TEST**

1/10-SCALE NITRO

Schumacher Nitro 21 XT-R

Too much power?

No such thing! by Bob Hastings



Someone once said "You can never have too much fun, cash, or horsepower." If you have a passion for excess, the folks at Schumacher* had us in mind when they engineered the Nitro 21 XT-R. There ain't nuttin' subtle about this hot-rod; scrawled across the box top is: "The world's most powerful 1/10-scale truck." Even before you open the box, it's easy to believe Schumacher's claim; this truck is powered by a Thunder Tiger Racing (TTR) Pro .21R engine that typically powers 1/8-scale buggies, so it's more than a match for a 1/10 truck. There's no way this couldn't be fun!



DATA CENTER

VEHICLE TYPE 1/10 nitro, 2WD stadium truck

BEST BUYER Enthusiast looking for high-power, high-speed excitement

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Good

Parts fit/finish Good

Durability Good

Overall performance Good

SPECIFICATIONS

Manufacturer Schumacher

Model Nitro 21 XT-R

Scale 1/10

Street price \$319.50

DIMENSIONS

Wheelbase 10.6 in. (270mm)

Width 12.2 in. (310mm)

WEIGHT

Total, as tested 86 oz. (2,437g)

CHASSIS

Type Stamped semi-tub

Material Powder-coated steel

DRIVE TRAIN

Type Enclosed belt-drive transmission

Ratio 2.4:1

Primary Clutch bell/spur gear

Drive shafts Telescoping plastic universals

Differential Ball

Slipper clutch None

Bearing type Shielded ball bearings

SUSPENSION (F/R)

Type Lower A-arm w/fixed upper link

Damping Oil-filled, coil-over shocks

WHEELS

Type One-piece, chrome-plated plastic

TIRES

Type (F/R) Schumacher

Vee-2/Schumacher Minispike

ENGINE AND ACCESSORIES

Engine Thunder Tiger Pro .21R

Starter Pull-starter

Carb Slide type

Exhaust Aluminum tuned pipe with cast header

Fuel-tank capacity 75cc

LIKES

- Blistering speed.
- Strong steel chassis.
- Does endless wheelies.

DISLIKES

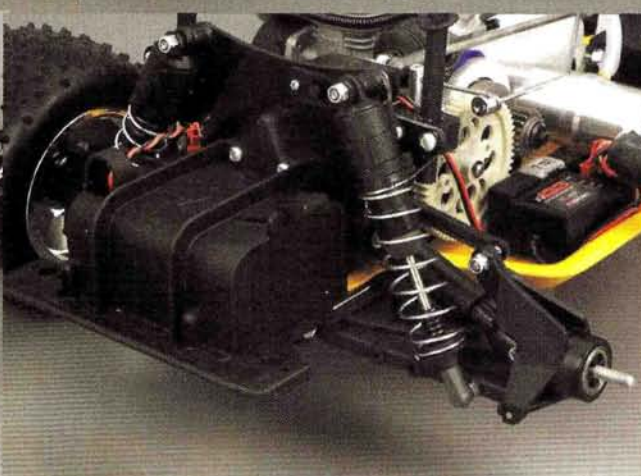
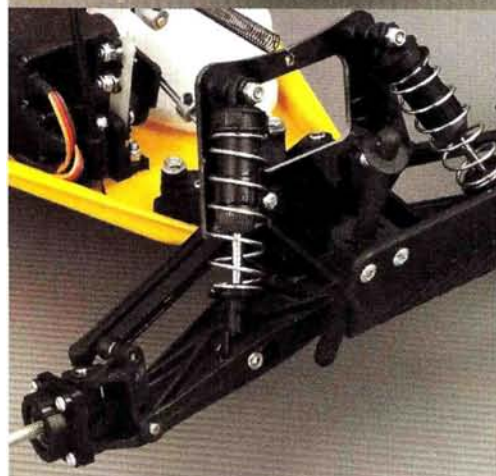
- Tiny build-it-yourself fuel tank.
- Weak steering linkage.
- No slipper clutch.
- Truck doesn't float (see "Performance").

TRACK TEST Schumacher Nitro 21 XT-R



One glance and you can tell that the Nitro .21 XT-R is all business. Its strong steel chassis, large engine and wide stance are all the ingredients it needs for exciting performance.

Below left: Schumacher's lower H-arm/fixed-length camber-link suspension is damped by hefty oil-filled coil-over shocks. The spring at the top of the shock tower is a safety device that will reduce throttle if the radio malfunctions. ■ Below right: unique splined hubs key into the drive wheels. For protection, the JR R133 receiver was relocated to the chassis' rear.



YOU'LL NEED ■ 2-channel radio ■ Steering and throttle servos ■ Fuel ■ Glow igniter ■ Polycarbonate-compatible paint ■ Tire glue

building & setup tips

The Nitro 21 XT-R is sold as a factory-assembled rolling chassis. The engine, tranny, wheels and tires are already in place, so only the fuel tank, radio gear and linkages are left to be completed. Pay attention to the drawings so that you correctly install the remaining components. Though it isn't difficult to put together, here are a few tips to help.

Step 1. The instructions call for the servos to be stacked vertically with both output shafts on the rearward side of the servo toward the rear. This can cause the throttle arm to interfere with the steering servo-saver. I flipped the steering servo to face forward; this leaves more room for the steering servo's servo-saver to swing (say that five times fast).

Step 3. The three-piece servo-saver has a weak spring; replace it with a heavy-duty Kimbrough*.

Fuel tank. To make filling the fuel tank easier, add a zip-tie handle to its lid. The small tank necessitates frequent pit stops, and fueling is already hampered by the tank's small filler neck that's partially blocked by the gas cap's return spring. The handle will allow you to open the tank without your fingers getting in the way of the filler neck.

Glue the tires on. Scrape the chrome from the rims' bead and apply some CA to lock the tires to the rims. If you don't scrape the chrome, the tires will just pull the plating off the rim.

Receiver. Protect your receiver with a cover, or wrap it in a balloon to waterproof it.

Exhaust. In the side of the body, cut a hole that's large enough to allow the exhaust extension to pass unrestricted; if you don't, the edges of the Lexan will eventually cut the tubing.

Post-run maintenance. As with any kit—especially a .21-powered vehicle—take care to check all fasteners between runs. If you discover a loose screw, remove it completely, clean the threads, and apply thread-lock before you reinstall it.

KIT FEATURES

• **Chassis.** No aluminum here, kids; the XT-R's foundation is a 0.0625-inch-thick stamped-steel, fully countersunk tub that has been powder-coated school-bus yellow. There isn't any upper deck or bracing; the chassis relies on the strength of the steel, and it feels strong enough to handle a pair of big blocks. Suffice it to say, you needn't be concerned about flexing. The entire chassis is assembled at the factory, and the front plastic nose plate is already screwed on, as are the engine and the rear end.

• **Drive train.** Belt drives are common in 4WD cars (especially in tourers) but rare in 2WD machines; the XT-R is one of the few with one. The system is enclosed in a sealed gearbox (if that term applies), so there isn't any worry of belt contamination. The spur gear is coupled directly to the layshaft without the aid of a slipper clutch, so the tranny isn't spared any of the XT-R's power. A wide rubber belt concealed in the transmission case runs from an aluminum top pulley to a ball differential. Perhaps the belt is enough to reduce excessive load on the internals, but only time will tell. Ball diffs are not common in gas vehicles, especially one as over-powered as this, but the XT-R diffs' 4mm balls are as beefy as they come. Telescoping plastic U-joints carry the torque out to bearing-supported hubs. Instead of a traditional pin or hex drive, a raised X-pattern on each wheel keys into a corresponding recess in each hub.

Here's a peek inside Schumacher's transmission. The wide belt carries power back to a ball differential instead of to the more usual gear diff.

• **Suspension/steering.** Coil-over shocks prefilled with 40WT fluid support fiber-filled lower A-arms that date back to the Schumacher Cougar buggy. They include clip-on preload spacers and Schumacher's usual two-piece pistons that can be configured in four ways to adjust damping. The rears also carry a stack of six external O-rings as a bump stop. A unique L-shaped, threaded hinge pin mates with the rear hub carriers in the lower arms; E-clips are used in the front. The upper support consists of a one-piece plastic camber link. The stock setup offers good damping for all but the largest crater.

• **Engine and accessories.** The TTR Pro .21R is usually found in 1/8-scale buggies, so it's more than adequate for the XT-R (now there's an understatement). The pull-starter-equipped Pro .21



Thunder Tiger's big Pro .21R has a slide carb and a rear exhaust; the engine's performance is complemented by its large, purple-anodized heat sink. The hefty linkages provide positive throttle and brake control.

features a slide carburetor and an aluminum piston with a chromed-brass sleeve (the classic "ABC" construction). A 180-degree cast header positions the polished-aluminum tuned pipe in front of the transverse-mounted engine. The exhaust is vented through a 4-inch-long, 90-degree outlet that exits a cutout in the body just ahead of the right rear wheel.

• **Tires, wheels and body.** Schumacher supplies its own tires for the XT-R. The Vee-2 front pattern is a pin-type surrounded by a set of center "Veess"; the rears have a rather coarse, stubby pin pattern.

The tires are mounted but not glued on 2.2-inch, chrome-plated, one-piece plastic rims.

The rims are interchangeable front to rear but are Schumacher-specific.

The easiest way to describe the XT-R's body is that it is like a race-prepped Hummer. The large clear shell does not include window masks, but there are only three windows. I prefer liquid mask anyway, so I never sweat the window openings. If you really want to enhance the truck's detail, you can mask the rear louvers as well. An enormous rear spoiler is the final touch; I think it adds to the truck's bold look.

PERFORMANCE

Well, let's see: a 1/10-scale truck powered by an engine that is usually found in 1/8 scalers: we couldn't wait to hit the track! Fellow assistant editor Kevin Hetmanski volunteered for pit duty—just for a shot at driving the XT-R. In the soft stuff, you can roll the power on, and the XT-R is

JR Racing XR-3 transmitter/R133 receiver

This radio is easy on the wallet and offers a host of features such as 3-model memory, dual rates, subtrims, endpoint adjustments and an easy-to-read LCD screen. It's a snap to program and is very comfortable to hold, even for people with smaller hands.



JR Racing Z2750 Super Race steering servo

This ball-bearing servo has 61 oz.-in. of torque and 0.09-second transit time to provide ample steering power.

JR Racing Z250 Standard Race throttle servo

With a claimed 49 oz.-in. of torque, JR's Standard servo has more yank than most other inexpensive servos. The Z250 offers plenty of braking power without leaving a smoking hole in your wallet on the hobby-shop counter.

Trinity 20/18 Break-In fuel and Monster Horsepower 20-percent nitro

I won't sacrifice a new engine's future by short-cutting the break-in period. Trinity's Break-In blend has 20 percent nitro and 18 percent oil, so it's an excellent blend for power and TLC during break-in. After the fifth tank, I switched to the regular 20-percent-nitro Monster Horsepower fuel.



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TRACK TEST Schumacher Nitro 21 XT-R

quite manageable. A firmer grasp on the throttle throws rooster-tails of debris into the air as the rear tires hunt for grip. It takes a little finesse to balance throttle and steering input, as a firmer grip on the throttle will either spin the rear around in the loose stuff or put the truck's nose back into the air.

The brakes are highly effective; I was quite impressed at how quickly this missile stops, and I credit the fiber disc and the JR race servo. It's helpful to keep a fuel bottle nearby because the 75cc tank is no match for the .21, which will drain it in about 5 minutes.

The suspension easily soaks up bumps, but large hops bottom out the chassis, and washboard terrain gets the truck out of shape easily. Durability was not an issue during testing, but I don't think the truck is up to big-air action; the heavy chassis and engine would put quite a strain on the 1/10-scale suspension parts.

For all of the XT-R's fun potential, it does demand that you respect its massive power. Find a surface where it has traction, and you can pull a wheelie at will, but it's tough to get it to turn when

the front wheels are off the ground. Before I could snap out of my wheelie-induced trance, the truck executed a perfect nose-high entry into about 5 inches of water left standing after a soaking rain the day before. Kevin thought this was hilarious, and even though I offered to buy him all the remaining Ring Dings in the office vending machine, I couldn't get him to keep my little underwater escapade a secret. Guys: the "Yellow Submarine" jokes are getting old.

THE VERDICT

If you don't want to be outgunned when you're running with the gang, show up with the Schumacher XT-R. It's faster than a scalded cat and handles the moguls well, although it comes up short in handling prowess and fuel range. But having to take it easy through the turns and to top off the tank frequently are small trade-offs for the XT-R's wheel-standing performance and overall fun.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■

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**TRACK
TEST**

1/10-SCALE ELECTRIC

Alex Racing Club Enthuse 4

Mid-motor Japanese exotic by Greg Vogel





Regardless of drive-train type, most touring cars have the batteries somewhere in the middle of the chassis and the motor mounted behind them, but that trend could be changing. With their mid-mounted motors, the Team Losi Street Weapon and OFNA OB-4 stand out as exceptions, and the latest arrival in my touring car fleet also has its motor ahead of the batteries. The Alex Racing* Club Enthuse 4 (CE4) is a unique mid-motor design that puts the motor up near the steering bellcranks with its upper layshaft above the motor and the batteries close together in the rear. The suspension is similar to other A-arm cars', but Alex has incorporated a few new features there, too. Let's see what makes the Alex car unique, and more important, let's see whether these features work on the track.

DATA CENTER

VEHICLE TYPE 1/10-scale electric 4WD touring sedan

BEST BUYER Experienced racers looking for a competition sedan

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Not reviewed. Our test sample was sent directly from Japan with a Japanese instruction manual. U.S. kits may come with an English-language version.

Parts fit/finish Good

Durability Good

Overall performance Good

SPECIFICATIONS

SCALE 1/10

LIST PRICE \$450

DIMENSIONS

Wheelbase 10.07 in. (255.8mm)

Width 7.37 in. (187.2mm)

WEIGHT

Total, as tested 53 oz. (1,506g)

CHASSIS

Type Double-deck

Material Woven carbon fiber

DRIVE TRAIN

Type Dual-belt 4WD

Transmission Pinion/spur

Drive shafts CV-style axle

Differentials (F/R) Torque splitter/ball

Bearing type Metal-shielded bearings

SUSPENSION (F/R)

Type Lower A-arm w/adjustable upper link

Damping Oil-filled coil-over aluminum shocks

WHEELS

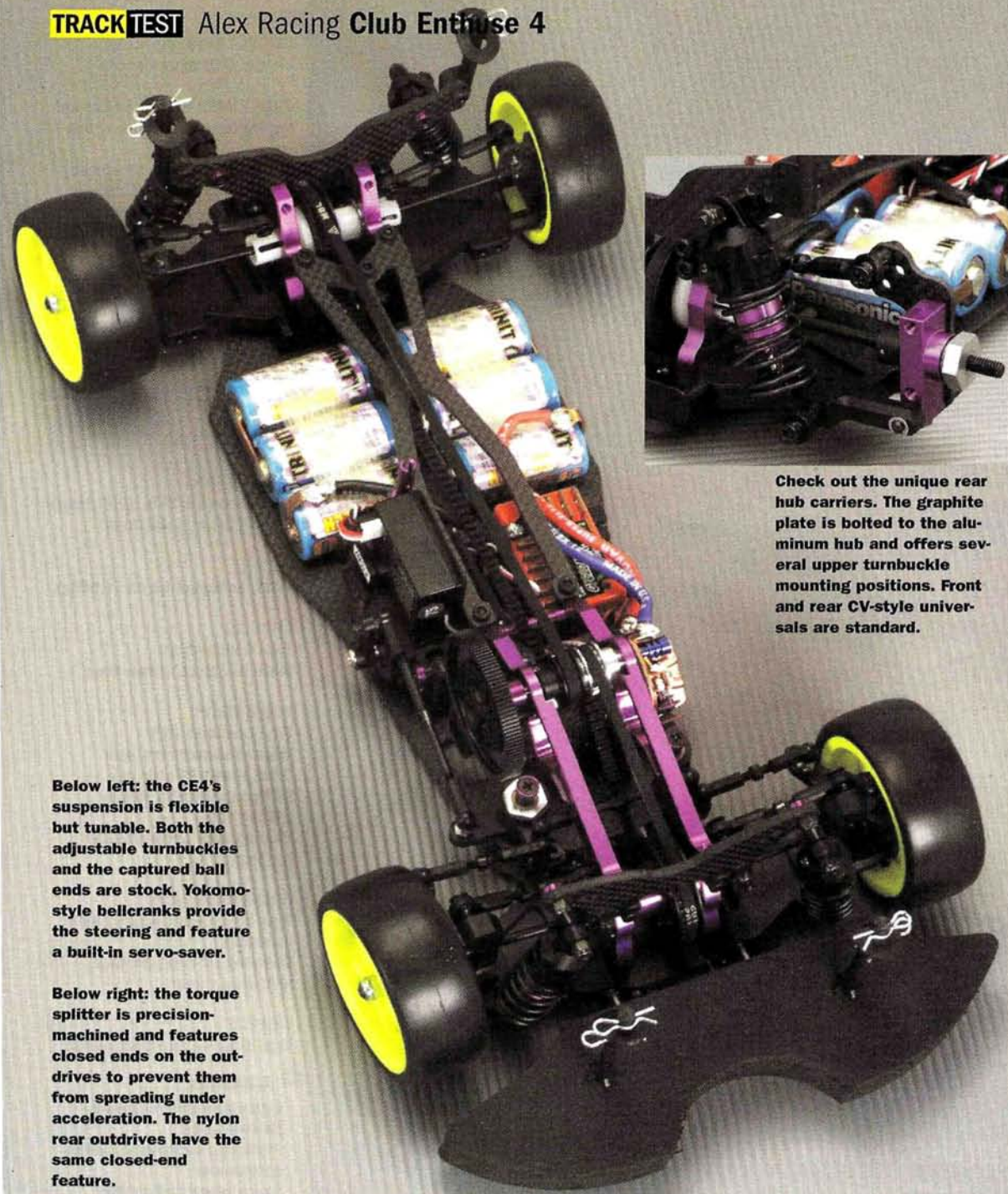
Type 5-spoke, one-piece plastic

LIKES

- Lightweight nylon outdrives.
- CV-style axles.
- Precision-machined aluminum components.
- Sturdy woven carbon-fiber chassis and towers.

DISLIKES

- Flimsy suspension arms.
- Spur gear isn't included.
- Optional parts required for full-time 4WD.

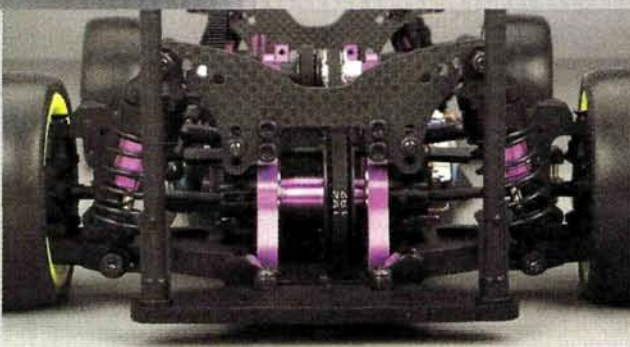


Below left: the CE4's suspension is flexible but tunable. Both the adjustable turnbuckles and the captured ball ends are stock. Yokomo-style bellcranks provide the steering and feature a built-in servo-saver.

Below right: the torque splitter is precision-machined and features closed ends on the outdrives to prevent them from spreading under acceleration. The nylon rear outdrives have the same closed-end feature.



Check out the unique rear hub carriers. The graphite plate is bolted to the aluminum hub and offers several upper turnbuckle mounting positions. Front and rear CV-style universals are standard.



YOU'LL NEED ■ 2-channel transmitter and receiver ■ Steering servo ■ Electronic speed control ■ Motor ■ 190mm body ■ Polycarbonate-compatible paint ■ 6-cell stick pack ■ Charger ■ Spur gear ■ Tires

FACTORY OPTIONS ■ Ball diff set—part no. 5053 ■ 2.5-degree rear toe-in block—5503 ■ Hard steering knuckles and caster blocks—5506 ■ Hard suspension-arm set (one front/one rear)—5505 ■ Aluminum axle—5520 ■ 4.5mm-thick suspension pivot block—5504 ■ 0.5mm/1mm suspension pivot-block shims—5500/5501

building & setup tips

Since our test sample came directly from Japan, the manual was written in Japanese, but even though I couldn't understand it, I built the CE4 successfully by following the diagrams. It's easy to determine which screws you need for each step as you look at the numbers next to their pictures. The suggested camber positions and shock-mounting locations are well-defined by dark spots on the parts diagram. Fortunately, there is an English-language setup sheet of angles and heights in the back of the manual. Here are a few other tips I learned along the way.

BUILDING

Step A-1. Before you glue the belt-retaining plate to the diff pulley, clean and scuff the two surfaces. Use medium or thick CA to glue the plates because thin glue may flow between the pulley teeth. I used Associated* black grease on the thrust bearing and Associated clear grease on the diff balls.

Step B-1. Use Loctite* on the pulley setscrew.

Step E-1. File the battery slots so that the batteries sit lower; this also prevents the pack's shrink-wrap from being cut by the sharp chassis edge.

Step I-1. Use Loctite on the universal setscrews.

Step I-2. Note that the word "Comet" on the steering knuckle faces upward.

Step M-1. Use Loctite on the spur-gear-adaptor setscrew.

Step M-3. If you get a kit with Japanese Instructions, notice the gear chart. It suggests a 64-pitch, 116-spur and 36-tooth pinion for modified motors and a 106-spur and 50-tooth pinion for stock.

SETUP

I started with the tips listed in the back of the manual, but here is my final setup (after testing):

Front ball diff. The test track is pretty tight—no place for a torque splitter. I yanked the splitter in favor of a ball diff.

Solid-mount front pulley. A front one-way pulley is standard equipment, but I prefer full-time 4WD. I replaced the one-way with a fixed "rear" pulley, and I filed a flat spot on the shaft so that the setscrew could be tightened against it.

Gearing. 116-tooth spur and 36-tooth pinion.

Tires. I used Pro-Line 1092 tires with Pro-Line medium inserts on Pro-Line Gummy rims. The weather was cold, so I used Trinity* tire warmers to get the tires up to temperature before I hit the track.

Camber. 1 degree negative front and rear.

Toe. Front, approximately positive 0.5 degree out. I installed the optional 2.5-degree block in the rear.

Shocks. Fronts—45WT oil, stock pistons and springs, 1/16-inch limiter inside. Rears—same as fronts, but with 40WT oil.

I used all of the recommended shock- and camber-rod mounting locations.



The woven-carbon-fiber chassis is symmetrical, so torsional flexing is equal on both sides. Notice where the battery and motor are mounted. The positions of the car's two heaviest components should provide better front and rear traction.

• **Chassis.** The CE4 features a double-deck woven-carbon-fiber chassis, but its design is unlike other race cars'. The CE4 is a mid-motor car; that means that the motor is behind the steering bellcranks and in front of the batteries. Depending on gear selection, a slot under the motor mount allows the motor to sit low in the chassis. Behind the motor is the section where the electronics are mounted, and this section has more cutouts—this time, to reduce weight. The saddle-pack-battery slots bring the pair of 3-cells close to the center to reduce chassis roll; strapping tape holds the cells in place. The upper deck is a narrow carbon-fiber plate that has a tab for the antenna holder. The deck spans from the center to the rear bulkhead and also plays host to the belt guide. The guide tensions the belt and raises it enough to allow the batteries to fit beneath.

• **Drive train.** Like most touring cars, the Club Enthuse 4 uses a dual-belt design. The machined-aluminum front bulkheads are the stars of the show. The large pieces house the motor and layshaft and then arch over the bellcranks to

grab the front diff. Actually, it isn't really a differential, since it's equipped with one-way bearings in a purple-anodized aluminum housing for each steel outdrive. Likewise, the layshaft pulley that spins the "diff" is equipped with a one-way bearing. This arrangement is commonly referred to as a "torque splitter," but it isn't used in most stateside racing, where full-time 4WD is preferred.

Unfortunately, the one-way layshaft pulley can't be locked out, so you'll have to replace it along with the front-drive pulley assembly if you want 4WD with front and rear differentials. If you wish to go this route, just pick up an additional rear

diff—it will drop right in, and it's a nice piece. The outdrives are machined of lightweight nylon to reduce rotating mass, and their closed ends prevent the halves from splitting under acceleration. The diff rings are notched and keyed to the outdrives.

The rest is pretty much a conventional ball diff: bearing supports, a thrust bearing, a pulley and a locknut with spring. For easier battery installation, the long rear belt snakes through a pulley before it gets to the diff, and a short belt transfers power to the front. Universal axles with CV-style joints (who doesn't copy MIP CVDs these days?) transfer power from the center drive train out to the wheels, and all the parts turn on shielded ball bearings. The only thing missing from the drive train is a spur gear. Now, I know that this is a racecar, and I can understand that it doesn't include tires, body, or electronics, but no spur gear? C'mon.

• **Suspension.** The CE4's suspension is a combination both of innovative and conventional com-

KO Propo Mars transmitter and receiver

This is an all-around cool radio system. The KO Propo* Mars has great features such as a skill-level select command that allows you to tune your radio to suit your skill level. If you're just starting out, use level 1 to adjust the basic features. As your skills advance, you'll be able to access more adjustable functions. The basic level allows you to make adjustments such as trimming and reversing. The higher levels allow you to adjust curves and endpoints, and you can even play with the ABS option.

KO Propo 2123 servo

This KO servo is powerful. It has a separate power wire that must be soldered to the ESC because the servo requires a 7.2V power source. It has lightning-quick response and is very strong.

Novak Cyclone TC speed control

The "TC" stands for touring car, so this ESC was a natural for the Alex machine. The factory-programmed profiles were created with touring cars in mind, but the TC is hardly a one-trick controller; the TC profiles can be used for other racing disciplines, and if you want to get creative, you can create your own profiles with Novak's* Pit Wizard or PC software. Added bonus: the Cyclone's solder posts and small footprint made it easy to wire the controller into my sedan.

Trinity Panasonic Matched 3000s

If you're going to drop in a motor with a killer wind, you'll have to supply it with a battery that can provide enough run time and power to win a race. I strapped in some Trinity matched nickel-metal cells for a no-worries run time.

Trinity D4 11x2

To get the CE4 moving competitively, I bolted in a Trinity D4. It features copper brush hoods, built-in capacitors and a super-efficient can that reduces the motor's running temperature.

Protoform Chrysler 300M body

The Protoform 300M should handle well, but I chose it because it looks badass. As usual, a full set of logos and detail decals, plus a separate Lexan wing, are included.

THE COMPETITION

	Drive train	Bearings	Diffs	Shocks	Chassis	Street price*	Reviewed
Associated TC3	Shaft	Yes	Ball	Aluminum	Tub	\$225	2/00
Yokomo MR-4 Pro	2-belt	Yes	Ball	Aluminum	Tub	\$229	4/00
HPI RS4 Pro 2	2-belt	Yes	Ball	Aluminum	Double-deck	\$219	5/99
Tamiya TA04 Pro	2-belt	Yes	Ball	Plastic	Double-deck	\$308	12/00
Alex Racing Club Enthuse 4	2-belt	Yes	Torque Splitter/ball	Aluminum	Double-deck	\$450	01/01

*Approximate; prices vary with location.

ponents. Starting up front from the inside, the black-anodized machined-aluminum arm supports are separate from the center bulkhead. They capture plastic pivot balls that support the hinge pins. Long suspension arms (that is, long for a 190mm car) hold the hub carriers and steering knuckles. These parts and the rear arms are molded in soft plastic, which is good for durability but not very good if you want precise handling. Other parts—such as the two-piece rear hubs—are more solid. A machined-aluminum block supports the axle bearings, and a graphite plate attached to the block reaches toward the chassis to grab the camber links. The links are adjustable steel turnbuckles threaded into captured ball ends. Thick, woven-carbon-fiber shock towers are bolted to the purple-anodized aluminum front and rear bulkheads. Dual cap shocks feature aluminum bodies, titanium-nitride-coated shafts and double O-ring seals. The dual cap design allows you to build the shock from the bottom up so that you'll trap less air inside. You'll also be able to bleed excess oil out through a screw hole in the cap. Heavy springs and an assortment of preload clips round out the suspension package.

• **Steering.** Alex "borrowed" the steering bellcranks from Yokomo's MR-4 series. The main bellcrank incorporates an adjustable servo-saver with both sides supported by brass bushings. Because the steering servo is behind the motor, Alex supplies a long turnbuckle to reach the front-mounted bellcrank.

• **Body, wheels and tires.** The CE4 does not come with a body, but I had just received the new Protoform* Chrysler 300M body, which not only looks cool but also appears to have excellent aerodynamics. I painted mine with Parma* FasKolor paints and mounted it on the car. The kit does include a set of yellow 5-spoke rims, but it doesn't come with inserts or tires. I started with a set of new Ride* RS Belted Type J28 slicks with HPI* hard inserts in the front and medium-soft in the rear.

PERFORMANCE

I went to my home track, RC Madness in Enfield, CT, for one of the season's last outdoor meets. I went out on the track with a summer setup: 55WT oil in the front, 45WT in the rear; warm-weather tires with hard inserts in the front, medium in the rear. I also installed the optional ball diff for the front and locked the center one-way bearing. The track at Madness is pretty tight, and one-ways just never work.

I hit the throttle, and the car whined as it took off; the diffs were obviously too loose. I rolled the car slowly around the track for one more lap to allow the notched diff rings to seat themselves in the Delrin diff halves. I pulled in, tightened the front and rear diffs and went back out to finish my practice pack. The car was very responsive to the slightest steering input, but when it came to taking a hard turn, it just slid. This was most likely because of the cold weather, but even so, the CE4 was nimble, and I was able to gather it up and successfully negotiate the course.

I went back to the pits to change to a cold-weather setup. To "soften" the car and gain traction, I put Losi* 45WT oil up front and 40WT in the rear. I also switched to Pro-Line* wheels, tires and inserts (see the "Setup" sidebar). Back on the track, the car handled a lot better with only slight on-power push, but when I let off with a little coaster brake dialed in, I was able to make my way quickly around the tight corners.

What about durability? you ask. Here's a durability story for you: I was in the middle of practice just rounding a corner dot and preparing to accelerate down the straight when another driver decided to practice. He turned on his radio with—you guessed it—the same channel as I was using. The CE4 went full tilt into a semi-raised corner dot and smashed the front end. It then continued straight into the cement barrier on the outside of the straight. It rolled away unscathed, but my beautiful 300M body looked as if it had just been run over by a Mack truck.

THE VERDICT

At the track, the Alex Racing CE4 was the subject of a lot of "What the?" comments, and they were generally followed by "Cool!" With its precision-machined aluminum and graphite parts, the CE4 is a well-crafted car. My only complaint is about the car's soft plastic suspension components. They may have been the culprits behind the car's push during my track test. This flaw can easily be fixed with Alex's aftermarket "hard" arm sets, which I have already installed but have not had time to test (look for a follow-up report soon—probably with carpet testing). If you're looking for a highly tunable, one-of-a-kind racecar with good handling characteristics, check out the Alex Racing Club Enthuse 4.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■

1/10 SCALE www.NewEraModels.com

New Era Models P.O. Box 7378 Nashua, NH 03060 603-888-4453
DEALER INQUIRIES INVITED

"CLOD" Upgrades

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MCT202 Long 4 Link Suspension	\$79.95
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MCT204 Steering Servo Adj. Up Front	\$34.50
MCT205 Rear Steering Eliminator	\$39.95
MCT207 Heavy Duty Steering Rods	\$39.95
MCT202 Rear Sway Bar	\$39.95
MCT201 Front Bumper	\$19.95
MCT401R Shock w/ Reservoir (SALE) \$60.00	
MCT402 Steering Kit 20 pieces (SALE) \$24.50	
MCT403 Right Angle Body Mounts (pr.) \$ 3.95	

"CLOD" Options

MCT420 Cantilever Kit (no Bearings)	\$69.95
MCT421 Cantilever Kit w/ Bearings	\$89.95
MCT422 Kyosho Wheel Adp. (4)	\$49.95
MCT423 New Era Mather Tires (pr.)	\$20.95
MCT103 "JUC" Chassis Only	\$225.95
USA101 Complete Upper Chassis	\$189.50
QFN101 Chassis OFNA M/B later	\$189.50
NTP181 1/8 Scale Top Fuel (10x21)	\$699.95
NPS102 1/8 Scale Pro Stock (10x21)	\$529.95
TRX105 Texas NitroBuster Chassis	\$29.95
NTP210 TexasNitroBuster w/ 10x21 Parts	\$ 9.95

1/10 SCALE UPGRADES

JUGGERNAUT UPGRADES

Steel Tube Chassis	Call for Prices
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ULTRA-SCALE DRAG TRUCKS

AGT103 Ultra Chassis	\$79.50
AGT104 for 21 Engine	\$109.50
AGT101 Rear Brace	\$21.95
AGT102 Nose Tubes	\$ 7.95

T-MAXX CNC Aluminum Upgrades

TRM320 Front Skid Plate	\$21.95
TRM321 Rear Skid Plate	\$19.95
TRM320SD 3.2mm Fst Skid	\$24.50
TRM321SD 3.2mm Rear Skid	\$24.50
TRM322 Front Bumper pr.	\$16.95
TRM323 Rear Bumper pr.	\$16.95
TRM324 Front Bumper Supports	pr. \$24.95
TRM325 Rear Bumper Supports	pr. \$24.95
TRM102 Rear Sway Bar	\$39.95 (Requires TRM325)
TRM305 Front Sway Bar	\$39.95 (Requires TRM324)
TRM326 Lower Braces pr.	\$54.95
TRM327 Throttle Servo MI	pr. \$18.50
TRM328 Steering/Shift Servo MI	pr. \$18.50
TRM329 Steering Drag Link	\$ 9.95
TRM330 Front Bulkhead	pr. \$79.50
TRM331 Rear Bulkhead	pr. \$79.50
TRM332 Upper Control Arms w/ wipol lock	\$44.50
TRM333 Lower Control Arms w/ wipol lock	\$49.50

T-MAXX CNC Aluminum Upgrades

TRM334 Center Skid Plate	\$15.00
TRM336 Fst or Rear Shock Tower	\$30.00
TRM910 Roll Bar W/Brace	\$39.50
TRM103 4.7mm Chassis	\$64.50
TRM107 3.2mm Ex. Main Chassis	\$69.95
TRM321EX Rear Skid	\$26.50
TRM125 Engine Mount for Rear Exhaust 15 or 21 Pull Start	\$35.00
AGT301H Torque Ripple Pipe	\$29.95
AGT301W Pipe Wire Blue	\$ 5.00
TRM241 Header Blue	\$19.95

1/4 SCALE www.NEMScaleCars.com

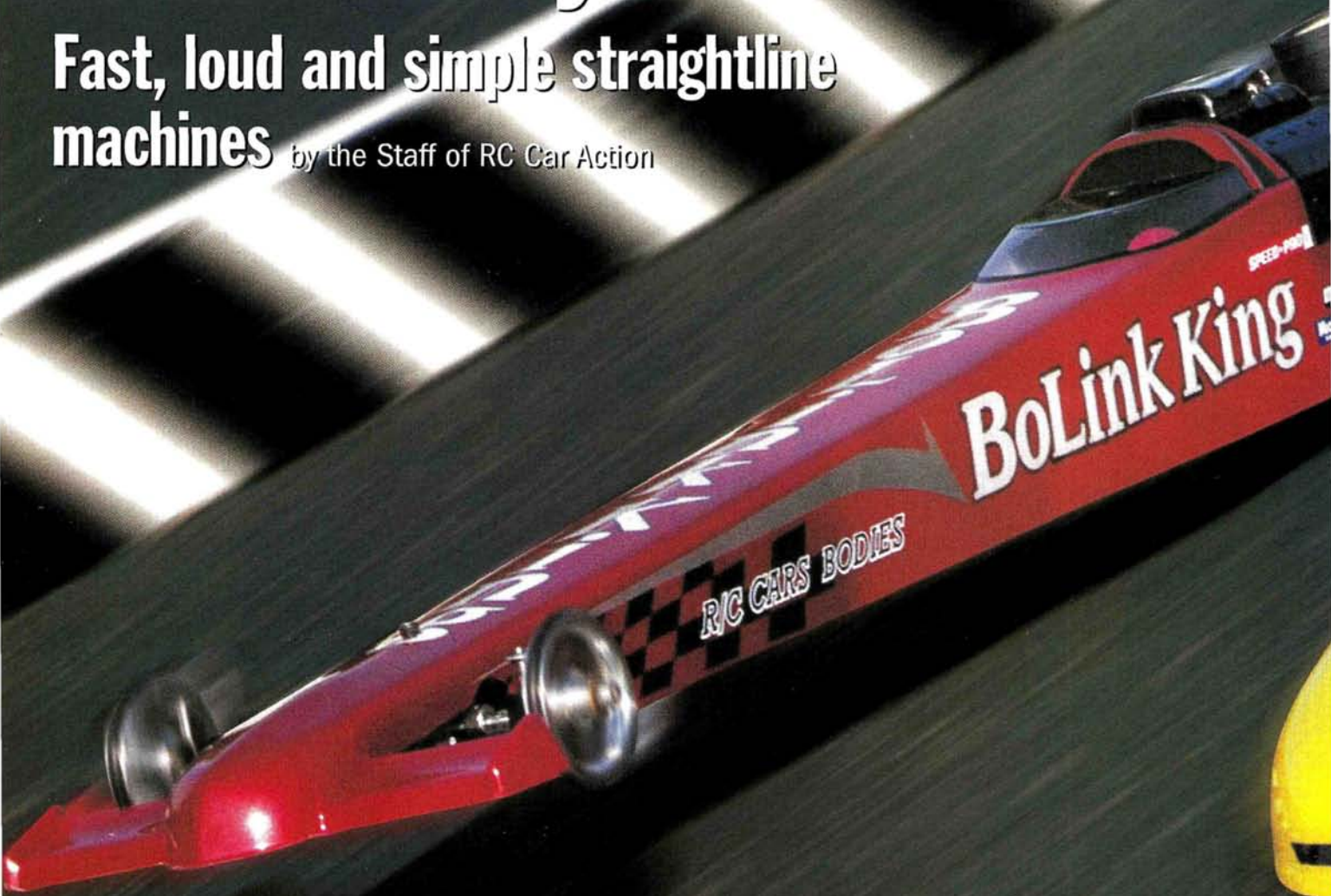
ROAD DRAG TRUCK

Kits Starting at \$995.00 Including Gasoline Engine

Bolink Nitro Dragster and Funny Car

Fast, loud and simple straightline machines

by the Staff of RC Car Action



We've all seen full-scale drag racing on television, but the boob tube can't even come close to the sensory overload of strip-side seats at an actual drag event. The place is redolent of nitro, burnt rubber and hot pavement, and the cars appear larger, brighter and faster as you watch them rip across a full quartermile instead of your TV screen's 27 inches. But what you'll remember most is the sound. You know that guy in your neighborhood who rides a Harley with open pipes? Imagine the obnoxious blatt of that poseur's hog multiplied by 1,000, and you've got your ear up to the headers. Are you there? Good. The real thing is even louder.

That thunder is the only thing that's missing from electric RC drag racing. As ridiculously fast as the multi-cell missiles are, the sight of them surging down the strip in total silence is almost surreal. And if you're a true drag



DATA CENTER

VEHICLE TYPE Nitro-powered, 1/10-scale Dragster and Funny Car

BEST BUYERS Nitro enthusiasts, drag-racing enthusiasts, speed freaks

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions: Satisfactory (for experienced builders)

Parts fit/finish: Good

Durability: Good (when kept in its element)

Overall performance: Very good

SPECIFICATIONS

MODELS Nitro Funny Car, Nitro Dragster

MANUFACTURER Bolink

SCALE 1/10

LIST PRICES \$159 (Funny Car), \$169 (Dragster)

STREET PRICE \$120

DIMENSIONS

Wheelbase (Funny Car/Dragster) 13.25 in. (336.6mm)/25.75 in. (654.05mm)

Width (F/R), Funny Car 4.62 in. (117.5mm)/6.5 in. (165mm), (F/R), Dragster 4.62 in. (117.5mm)/7.4 in. (187.8mm)

WEIGHT

Total, as tested (Funny Car/Dragster) 35.3 oz. (1,003g)/40 oz. (1,020g)

CHASSIS

Type Plate

Material Fiberglass

DRIVE TRAIN

Type Straight-axle, direct-drive

Differential None

Bearing Type Oilite bushings

SUSPENSION

Type (F/R) Floating kingpin with coil-springs/none

Shocks None

WHEELS

Type (F/R) Machined aluminum/one-piece plastic

TIRES

Type (F/R) Rubber O-ring/glued foam

ELECTRONICS (NOT INCLUDED)

ENGINE AND ACCESSORIES (NOT INCLUDED)

LIKES

- Fast, noisy, fun.
- Cheap (the good kind of cheap).
- Easy for most hobbyists to build.

DISLIKES

- Instructions aren't clear enough for beginners.
- Funny Car does not accept a pull-start engine well.
- Clutch parts aren't included.
- Airplane-style fuel tanks.

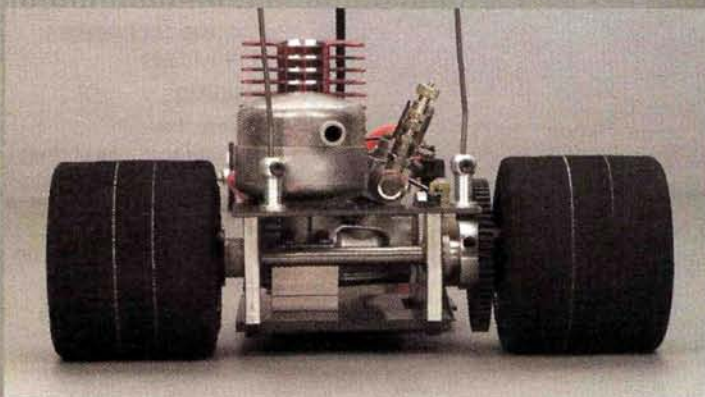
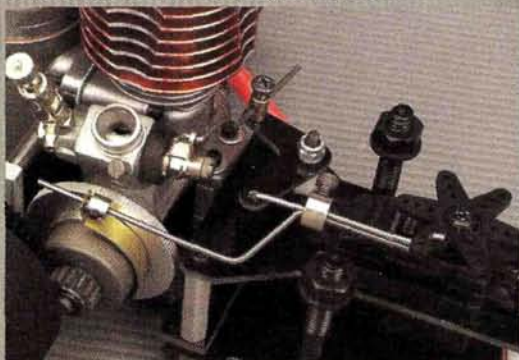
PHOTOS BY WALTER SIDAS

gear-head, it's probably just a little disappointing to have an electric motor spinning the slicks when your speed dreams revolve around eight pistons pounding at 15,000rpm.

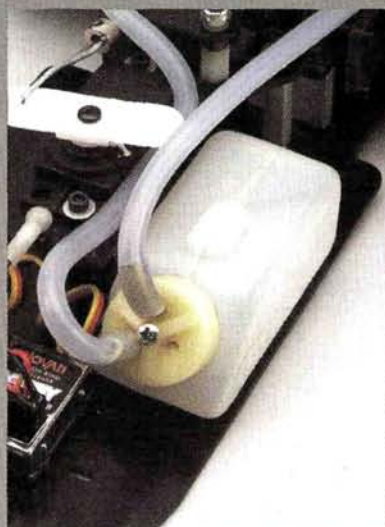
Well, could you settle for one piston? Bolink* brings affordable nitro power to RC drag racing with its Nitro Dragster and Nitro Funny Car kits. The simple fiberglass-chassis machines can be built fast and go faster; any .12 engine will provide more than enough power for king-of-the-neighborhood top speeds. Interested?



The fiberglass bellcrank system neatly solves the problem of linkage setup. The band brake looks primitive, but it works.



The riser pad under the engine mount is clearly visible here; you can also see the tightness of the gap between the engine and the tires; this makes fitting a pull-starter difficult. The wing mounts are standard equipment for the Nitro Dragster kit.



The tiny airplane-style tank is all you need for drag racing, but it's not the hot setup for fun-running; you have to refill it through the fuel line.

building & setup tips

As you might expect, it isn't difficult to build either of these drag machines. They aren't very good kits for first-time builders, though, because the instructions are a bit spotty. The text is accurate, and a separate sheet of detailed photos helps, but if you're looking for a picture for every step with arrows and a hardware key, you'll be sorely disappointed. If you've ever built any Bolink car or already have a nitro kit under your belt, you shouldn't have any problems. Consider the following as you build.

Get a bump-start engine.

Neither car accepts a pull-start engine as assembled according to the instructions. The problem is tire clearance; the pull-start housing rubs the rear tires. The problem is minor on the Dragster; just add a few spacers to increase rear track. The same technique could work for the Funny, but you would have to space the wheels so far apart that they would protrude from the fender wells.

Get the right clutch.

Associated* makes this easy by offering a clutch kit just for applications like this. The 7621 kit includes a large flywheel for pull-start engines, and the 7621 kit has a small flywheel for bump-starters. Regardless of your engine's starter type, get the 7622 pull-start kit; you'll need its large flywheel. Why? See the next tip.

Use the riser blocks on the engine mounts. Even if you have a non-pull-start engine, you'll need to use the risers, or an Associated Nitro Dual Sport muffler won't clear the rear body-mount/wing-mount plate (the muffler is part no. 8912, and it seems to be the only muffler that works with these cars). When using the risers, you'll also need to use a large, pull-start-style flywheel, or your starter wheel won't reach the flywheel.

Apply thread-lock. There are lots of jam nuts, setscrews and metal-to-metal joints on the drag cars; be sure to hit them all with thread-lock.

KIT FEATURES

• **Chassis.** Both draggers feature flexible fiberglass chassis that "arch" under acceleration, just like a full-size drag car's. This helps to plant the rear wheels. Their fiberglass is quite thin (just $\frac{1}{16}$ inch), so be careful not to slam the cars into anything immobile. A fiberglass stiffener prevents them from being too flexible, and in the Dragster, the stiffening plate is shaped to pass over the steering servo. Both cars use identical front axle plates, and steel hardware is used throughout. The chassis are not thick enough for all the screws to be countersunk; where countersinking is not practical, button-head screws are used to help avoid snagging on the pavement.

The rear pod that houses the engine is constructed of thicker fiberglass stock ($\frac{1}{8}$ inch), and a short radio tray holds the throttle servo and a bell-crank assembly for the linkage. Aluminum stand-offs support these parts.

• **Drive train.** Drag cars have the simplest drive trains in RC. Both Bolink machines have straight steel axles that ride on Oilite bushings pressed into the aluminum rear pod halves. An aluminum spur-gear hub holds the spur on the axle with a setscrew, so there's no need for a differential, and plastic hubs (also pinched in place by setscrews) secure the included foam tires. A band brake stops the cars; it's just a brass strap with a cork pad that wraps around the clutch bell, but it should be effective.

• **Suspension and steering.** Both cars use old-school pan-car hardware up front with simple plastic steering blocks that slide on polished kingpins. Tiny coil springs load the steering blocks and provide a bit of give for any road ripples. The thin axle plate the parts are bolted to also has some bump-absorbing flexibility, but it's the chassis that provides the most "suspension." A pull-bar is used to set both chassis' ride height so they don't droop all the way to the pavement.

• **Engine and accessories.** Not much to report here; the Bolink draggers do not include an engine, clutch, or exhaust system. Engine-mounting blocks and an airplane-style fuel tank are included. You have to assemble the tank and install a fuel pick-up tube (also known as a "clunk"). The pressure tap and carburetor feed line both enter the tank through the cap, which is screwed into place. That means you have to fill the tank through the carb line. It's a hassle, but for hardcore racing, the tiny

tank is all you need. Fun-runners will want to install a conventional flip-top tank.

• **Body, wheels, and tires.** If you're used to handling $\frac{1}{10}$ -scale sedan and off-road bodies, the mile-long Funny Car and even-longer Dragster bodies seem extra impressive. Mike Ogle built and painted the "Bolink King" Dragster but used Bolink's streamliner body instead of the kit body (it is virtually identical but does not have the side dams and front wing). Richard Muise at Motion Graphics* painted the Funny Car using the body included with the kit, and Paul Conrad of Xtreme RC Raceway built the chassis.

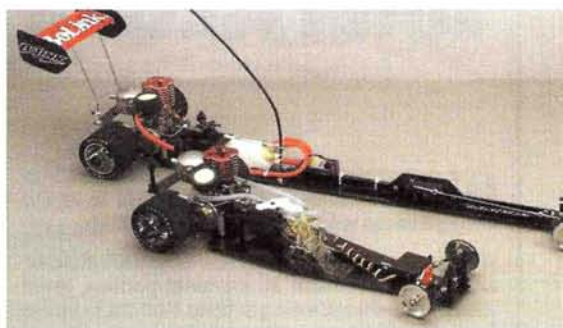
Green-compound foam tires on gold-dish plated rims equip the business ends of both cars, but the Funny's rear wheels are narrower. Machined-aluminum pizza-cutter wheels with O-ring tires spin on Oilite bushings and keep the front ends rolling.

PERFORMANCE

The drag cars' power-to-weight ratios make even the most mild-mannered .12 seem like a fire-breather, and getting power to the ground can be a problem. With that in mind, before hitting the track, I gave both cars a liberal application of Paragon* Ground Effects traction compound. A final check of the radio operation was the last step before the first runs; the engines had seen duty in other vehicles and were ready for fun.

Neither car could get the power to the ground when I mashed the throttle; the tires just lit up, and the cars did donuts (the Dragster cut a wider arc, of course). But with a little restraint, I was able to roll on the power until enough airflow over the wings got the wheels to stick, and then it was full throttle all the way. The Dragster was rock steady at speed, and the Funny was a little twitchy by comparison because of its shorter wheelbase. Given the lack of pour-it-on traction, we didn't concern ourselves with elapsed times on a 132-foot scale quartermile, and we suspect most buyers will be more interested in maximum speed, not quickness.

Of course, the time does come when you have to slow down and turn around, and that's where the single-purpose nature of drag-racing hardware becomes apparent. The cars turn only at low speed,



Nitro Dragster

- Dynamite* TNT .12R engine
- Airtronics* 94831 steering and throttle servos
- LRP* Phazer receiver
- Dynamite 20-percent-nitro fuel
- Trinity* Nitro receiver pack

Nitro Funny Car

- Dynamite TNT .12PD engine
- Futaba* S3003 steering and throttle servos
- Novak* Mercury receiver
- Dynamite 20-percent-nitro fuel
- Trinity Nitro receiver pack

YOU'LL NEED

- .12 Engine
- Exhaust system (Associated 8912 Sport muffler recommended)
- Fuel
- Polycarbonate-compatible paint
- Thread-locking compound
- Steering and throttle servos
- Transmitter and receiver
- Receiver battery
- Clutch
- Clutch bell

Caster is your friend. Dial in as much caster as the front ends allow; it will help the cars run straighter. A little toe-in helps, too.

Install bearings. You'll go faster and the cars will have less "slop" in their rotating parts. All

you need are two $\frac{5}{16} \times \frac{1}{4}$ -inch and four $\frac{3}{16} \times \frac{1}{8}$ -inch flanged bearings, so it isn't expensive to upgrade from the included Oilite bushings.

Goop it up. If you're after genuine scale-quarter-mile performance and not just looking for a

screaming fast run across the parking lot, try using slot-car tire goop instead of RC tire sauce. The slot stuff is very aggressive and will make your tires stickier than flypaper.

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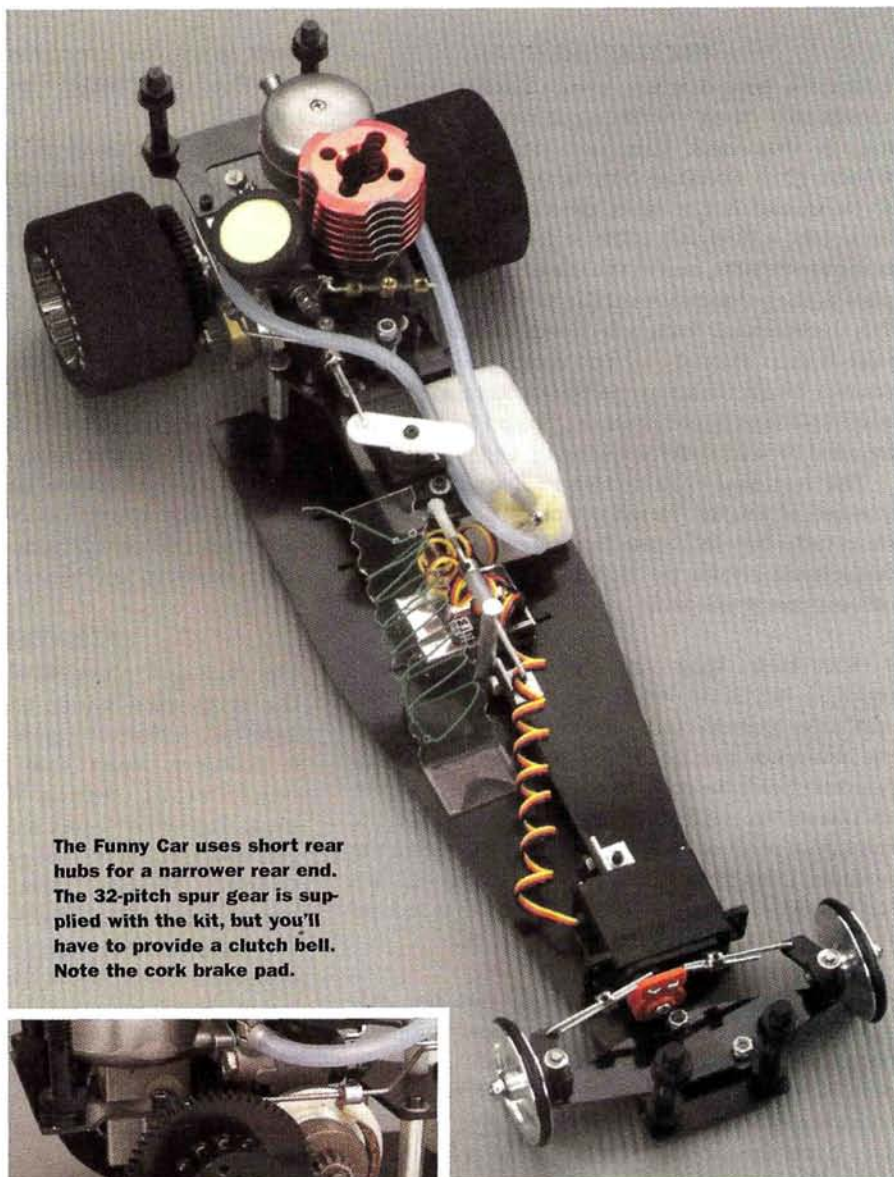
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The Funny Car uses short rear hubs for a narrower rear end. The 32-pitch spur gear is supplied with the kit, but you'll have to provide a clutch bell. Note the cork brake pad.



and handling is merely adequate to make the return-trip U-turn. The brakes are effective, but if you lock up the wheels,

both cars spin out of control. Going fast is easy; slowing down is an adventure. Make your first runs somewhere roomy!

THE VERDICT

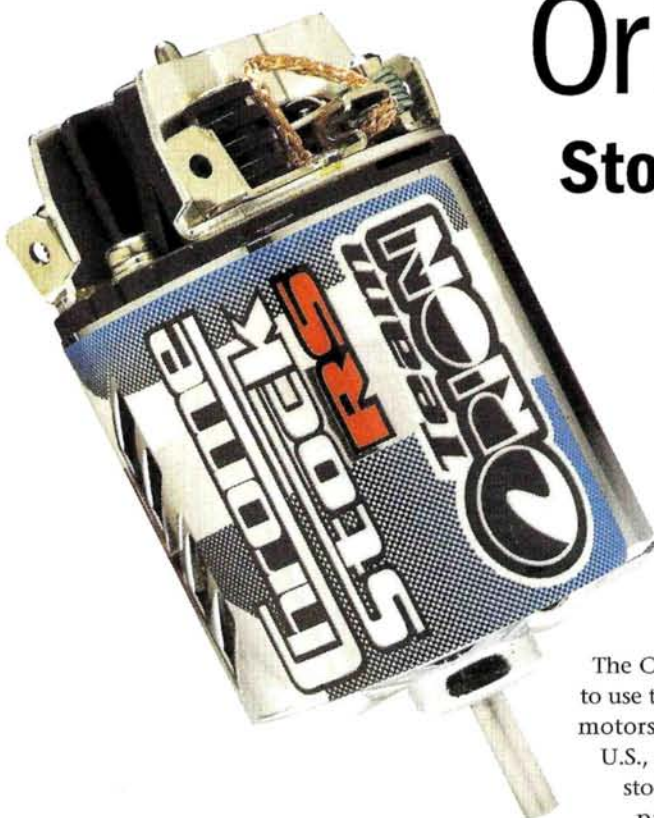
They can't go off-road, they don't turn worth a darn, and they have about as much ground clearance as a snake, yet Bolink's Nitro Dragster and Nitro Funny Car are irresistible. They're big; the Funny has a few inches over a touring car, and the Dragster is nearly twice as long. The cars look very different from the usual RC car, and that alone makes them more interesting to see in action. But it is "the action" that really matters, and both deliver plenty of thrills. Even with relatively mild engines, the power just seems to keep coming, and both machines will go as fast as you can stand. The Dragster is particularly impressive; it looks fast just sitting there, but when all 24 inches of it go flying past with dust devils in its wake, you can't help but think, "Wow! That thing's cool." I hope Bolink's Nitro Dragster and Funny Car will get a lot of hobbyists to try straight-line action. The kits' low cost (especially if you already have an engine and radio gear), make it hard to say no. Why fight it?

*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■

Orion Chrome

Stock RS Rebuildable

by Steve Pond



Not too long ago, I tested Team Orion's* new TOP Chrome Modified motor. The company recently joined Peak Motors to develop another motor that incorporates totally new features. The result of their combined design efforts converts these two motor builders into manufacturers of the Orion Chrome Stock RS. Among the TOP Chrome Modified's innovations were built-in capacitors; they allow enthusiasts to avoid having to solder capacitors to the motor's endbell—a task many find annoying.

The Chrome Modifieds were the first to use the new TOP design. Stock-class motors are far more popular in the U.S., and Team Orion's release of a stock mill has been highly anticipated. Let's check out the Chrome Stock RS.

- **Can.** The can's chrome-plated steel is 1.3mm thick at the top where the endbell is mounted. The round can features angled side vents—between the gaps in the magnets—and four large, triangular bottom vents, all of which allow airflow. Chrome plating has long been thought to trap more heat than other coatings do, but according to Team Orion, these larger vents compensate for any

heat supposedly trapped by the plating.

The can's top edge features a 2.2mm-wide notch that is indexed with a tab molded into the endbell to prevent it from moving. The combination of the round can and the small notch in the endbell doesn't provide much security against tampering, but it does satisfy the requirements of the race-sanctioning organizations that allow rebuildable stock motors.

- **Endbell.** The Chrome Stock RS's endbell is very similar to the one on the Chrome Modified motor. It features a molded-composite base, aluminum brush-hood heat sinks and chrome-plated-brass brush hoods. The hoods are mounted on top of brass

Looking at the numbers

I tested dyno-tuned RS versions of the Chrome motor. They have Orion Pro-Stock serrated brushes, polarized springs and pretrued commutators. The brush shunts had been soldered to the brush hoods for maximum conductivity, and the motors had been broken in at the factory. As always, we tested with the mills at room temperature, and they were given ample time to cool after the dyno leads had been soldered and between tests. In my first round, I tested out-of-the-box motors.

The motors consistently turned in power numbers in



Is it legal?

There's nothing outwardly unusual about the Orion Chrome Stock RS motor that would make you question its legality. Inside, however, is a feature that enters the "twilight zone" of rules interpretation: the machined armature. The laminations' outside diameter—or crown—is machined after the laminations have been assembled into a complete armature. Not only is it machined on the outside, but the step in each crown is also machined.

Rule number 5-41 in the ROAR rule book states: "No modifications to the physical construction of the motor can, endbell, or armature will be permitted (e.g., adding or removing material from the armature stack, changing the brush hoods from stand-up to laydown and vice versa, relocating spring posts)."

There are opinions both for and against legalizing armature changes. Right now, no official ruling has been made; all I can do is present the case for and against so you'll be able to draw your own conclusions.

• **The case in favor.** This position allows the manufacturers to machine armatures as long as the modification is done at the factory. This suggests that the rule applies to motors only after they've left the factory; owners aren't allowed to modify them, but any machine work done by the manufacturer is simply part of the motor's stock configuration.

• **The case against.** This is two-pronged: first, machining the laminations constitutes a modification of an armature's conventional configuration. If we interpret the ROAR rules to mean that the manufacturer—not just the end user—cannot alter the armature, then the Chrome Stock RS motor would have to be considered illegal. Second, if the rule specifically allowed manufacturers to machine the armature, it would be very difficult to determine whether a buyer had machined it even further. User tampering, in the form of additional machining, couldn't be easily detected, and so the "spirit" of the stock motor rules would be violated; they are meant to prevent such tampering.

The Chrome Stock RS falls into in the rules' gray area, but ROAR hasn't yet issued an official decision. The issue of machining the armature is a classic example of manufacturers looking for what isn't specified in the rules as often as they look for what is. There's nothing wrong this, especially when the rules aren't clearly defined, and it has been happening in racing—RC and full scale—for a very long time.

sinks. Located at the screw where a brush shunt with an eyelet would usually be attached, this motor's brush shunts are soldered into place.

The heat sinks are red and black—the universal colors for identifying positive and negative electric terminals. The color-coding

provides a quick visible reference that's useful when you attach the motor leads.

The small pieces inserted into the endbell on either side of the hole for the mounting screw are the built-in capacitors. This Orion innovation greatly reduces installation time compared with designs that require the soldering of standard capacitors.

plates that are sandwiched between the heat sinks and the endbell. The brass plates serve two purposes: they improve current flow by pressing the brushes against the brush hoods with a tension spring, and they serve as "electrical traces" for the capacitors and allow the connection between them and the endbell's sides. The capacitors, much like those in the Chrome Modified motor, are built into the endbell and span the gap between the endbell's two sides and the motor can. The Chrome Modified was the first motor to have built-in capacitors—an Orion/Peak innovation.

Another of the endbell's simple but practical features are its color-coded brush-shunt heat

the mid-120W range; they had an average efficiency of 73 to 75 percent, torque readings in the 100Nmm range and good spin-up times ranging from 0.43 to 0.45 second. The only noticeable problem was very slight brush bounce in random test runs. I cut each motor's comm and replaced the brushes and springs with Trinity* E-brushes and green, 11-ounce springs—a combination that has worked well in most of the stock motors I've tested. The motors improved marginally in most areas, though not as much as I've seen in other motor tests. This isn't a bad thing; it shows that the motors are well-prepared and that there isn't a lot left to squeeze out of them.

The only area of setup that required my attention was armature shimming. The motors all seemed to have the same shim setup. On inspection, however, I found that each needed slightly different shimming to center their armatures perfectly. This isn't unique to the Chrome: every motor I've ever tested has required some additional attention in this area. The fully prepped motors generated numbers in the high 120s for power, fractionally quicker spin-up times and higher torque levels, and they stayed about the same in all other areas.

Testing suggests that the Chrome Stock RS, though it hasn't set new class benchmarks, is a respectable, consistent performer. Even though it has a good balance of torque and rpm, it leans a hair toward the torque side of the power equation, and this makes it suitable for most popular racing applications. It's probably best suited to tracks with tight twisties and short straights, while it may be less at home on the faster tracks as a result of its slightly lower rpm. Max power is achieved at an average load of about 35 amps, and this suggests that the Chrome Stock RS would do better with a slightly larger pinion gear than other stock-class motors would use.

• **Armature.** The armature is the Chrome RS Stock's most intriguing component. It features a conventional, dual-rotor design that's intended to increase rpm. Nothing unusual there; it's what Orion *does* to the armature that's unique. The outer surface of the armature's laminations has been machined, and so it has the step cut into it—instead of being formed as part of the original laminations.

The Chrome RS Stock's machined laminations have been the source of some controversial interpretations of the stock motor rules. The rules vaguely suggest that the armature can't be modified. Opponents say that machining the laminations is a modification, but supporters think that it's OK because the manufacturer supplies the motor already machined. This interpretation of the rules presumes that only modifications made by the end user are illegal. We're not here to make a ruling for the racing organizations, but this is an important issue (see the "Is it legal?" sidebar).

Why machine the armature? Reducing its diameter increases the gap between it and the magnets. This presumably increases rpm but also reduces torque. The step that is machined across the laminations modifies the armature's magnetic field and effectively increases the motor's timing without moving the endbell (a feature first seen on the original Trinity Paradox motor).

The armature also features a standard 0.300-inch-diameter commutator with a locking device and an identification tag for tech inspections at the racetrack.



Above: the Chrome's unique armature features a machined outer diameter and a step on the crown of each pole. Most motore laminations have not been machined.

Left: the endbell features lay-down brushes, chrome-plated brass brush hoods and aluminum

brush-hood heat sinks. The plate that's attached to the endbell has a damping spring to prevent the motor brushes from bouncing excessively at high rpm. Many other motors have the damping spring on top of the brush hood.

Right: in addition to molded-in polarity markings, the Orion Chrome's endbell features color-coded heat sinks—easily visible reference points. Note that the brush shunts are soldered to maximize efficiency.



CONCLUSION

The TOP-based Chrome RS Stock brings Orion into the realm of rebuildable stock-class racing motors. In the dyno test's power figures, the Chrome RS Stock falls a little short of the benchmark P2K motor. For average power output and torque, however, the Chrome RS closely matches the Reedy Rage Type-R and the GM Pinnacle Gold motors, but is roughly 500rpm short of the Pinnacle Gold and more than 1,800rpm shy of the Rage at peak power output. As long as you change the gear ratio to compensate, rpm itself isn't overly important, and the Chrome has enough torque to pull a slightly taller gear ratio. The Chrome RS motor does show the highest efficiency in the current crop of rebuildable stock motors, and will help those who place a premium on run time.

In the final analysis, the Orion Chrome RS Stock is right in the hunt when it's matched against the Rage and Pinnacle motors, and though its numbers may not seem as attractive as those of the P2K, many stock-class racers wouldn't notice the difference. The motor's out-of-the box setup appears to be very close to ideal, so you won't have to spend time "tweaking" it to maximize power output. Just put it in your car, and run it.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■

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2000 READER'S RIDE OF THE YEAR

by Kevin Hetmanski

It's time again for the "Reader's Ride of the Year" and, as always, we had a wide variety of rides to choose from. This year's winner is Donald Cowart of Denham Springs, LA; he built the hot

nitro-powered sprint car you see on these pages. It isn't always easy to choose a winner, but I think you will agree that this sprint car truly deserves to be our 2000 "Ride of the Year"!

**Donald Cowart's
super sprinter**





SPECIFICATIONS

OVERALL LENGTH 17.75 in. (451mm)

OVERALL WIDTH 12.5 in. (317mm)

WEIGHT 70.4 oz. (1,995g)

ENGINE TOP CT12

RADIO Airtronics M8

RECEIVER FMA Direct Warlock

THROTTLE SERVO Airtronics 94102

STEERING SERVO Futaba S3003

TIME TO BUILD "It took about 11 hours to build my sprint car. The kit was easy to build, but making the shock towers, wing mounts and driver's side panels took a lot of time."

TOTAL COST "After adding up all the parts, the car cost me just over \$900 to build."

MOST DIFFICULT THING TO DO "The hardest thing to do was to make the shock towers, wing mounts and driver's side panels. I had to cut out all the pieces, drill out the shock tower and wing mounts and polish all the aluminum; this was very time-consuming."

2000 READER'S RIDE OF THE YEAR

CHASSIS

The sprinter's fiberglass chassis is from Bart's Parts. Since it is meant for oval racing, it's offset slightly to the left. The aluminum roll cage and nerf bars add realism to the car and help protect it. They are securely attached to the chassis with screws. The receiver battery is attached to a small piece of aluminum mounted to the rear bulkhead.

SUSPENSION

The front and rear suspension were borrowed from an Associated* RC10GT. The arms pivot on Lunsford* titanium hinge pins, and camber is adjusted with Lunsford tie rods. The front and rear aluminum shock towers were hand-built, drilled and polished by Donald. The front shock tower is in line with the chassis while the rear shock tower is offset to the right with the rear gearbox. Associated Teflon-coated shocks provide the damping on all corners.

ENGINE AND DRIVE TRAIN

A TOP* CT12 engine moves Donald's creation and gets the sprinter up to speed in a hurry. An OPS* air filter keeps crud out of the carburetor, and a modified MIP* header runs the exhaust to a CVEC* pipe, stinger-style. An MIP lightweight flywheel and 4-N-1 clutch get the power into the RC10GT gearbox through a 15T clutch bell and a 67T spur gear. Transmission mods include machined top, idler and diff gears from Robinson Racing*. The stock GT universals were replaced with MIP CVDs.

TIRES, WHEELS AND BODY

The sprint car rides on thick foam tires that are glued to machined-aluminum wheels from Bart's Parts. The rims look just like the real multi-piece rims that are used on full-size sprint cars, right down to the small, drilled divots on the outside of the rim that simulate screws. The wheels are attached to the axles with plastic adapters. The body is also a Bart's Parts item. It was covered with red paint, and Donald added stickers from Digital Graphics to finish it off. The wings are attached to the roll cage with custom aluminum mounts that Donald made himself. To add to the realism of the sprint car, headers from Bart's Parts were attached to the side panels.

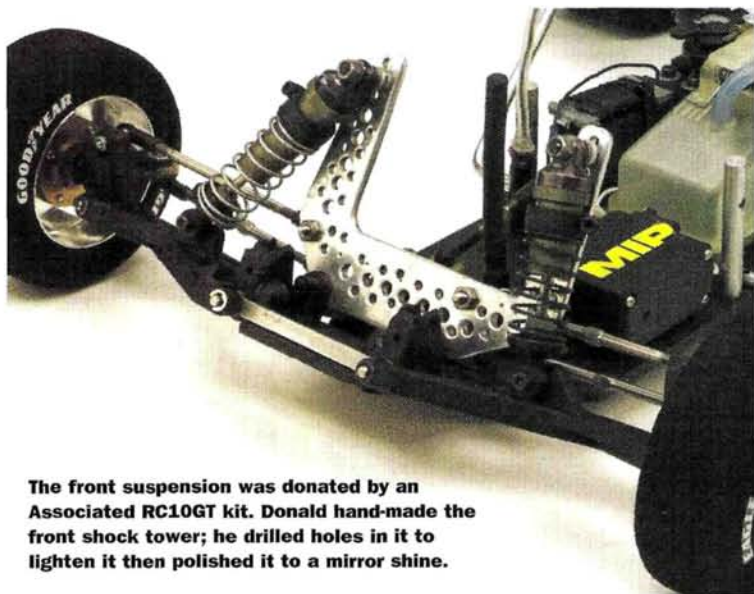
ELECTRONICS

Donald uses an Airtronics* M8 radio to control his nitro sprinter. For a little extra protection, an FMA Direct* Warlock receiver was used in place of the stock receiver. Its fail-safe feature is great for nitro-powered vehicles and prevents them from getting away from you if something goes wrong. An Airtronics 94102 controls the throttle and brake, while a Futaba* S3003 servo steers the car into the corners.

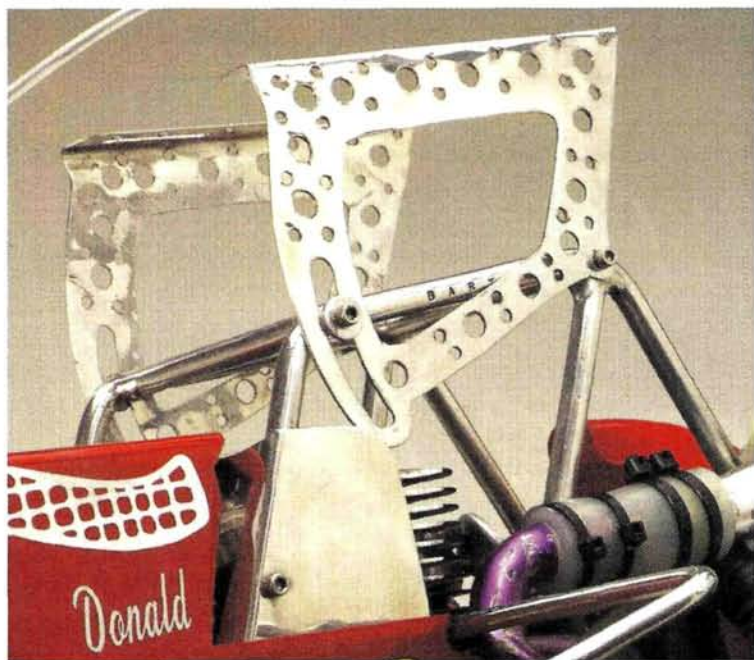
And there you have it. It's too bad I have to send this sprint car back to Donald; it is way cool! Donald has won a *Radio Control Car Action* T-shirt, decals and a one-year subscription (or extension) to the magazine. Best of all, he gets a \$500 gift certificate from DuraTrax* that he can use to purchase any DuraTrax products. He can choose from great stuff such as shocks, fuel, engines, Ni-starters, or even a new vehicle. What a prize! Congratulations, Donald, on being our 2000 "Reader's Ride of the Year" winner.

You could be a winner, too; just send a photo of your car or truck to "Readers' Rides," and next year could be *your* year!

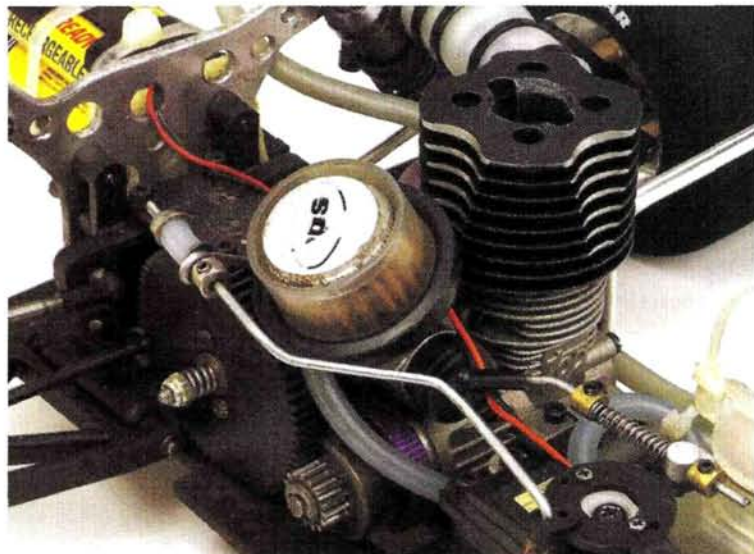
*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■



The front suspension was donated by an Associated RC10GT kit. Donald hand-made the front shock tower; he drilled holes in it to lighten it then polished it to a mirror shine.



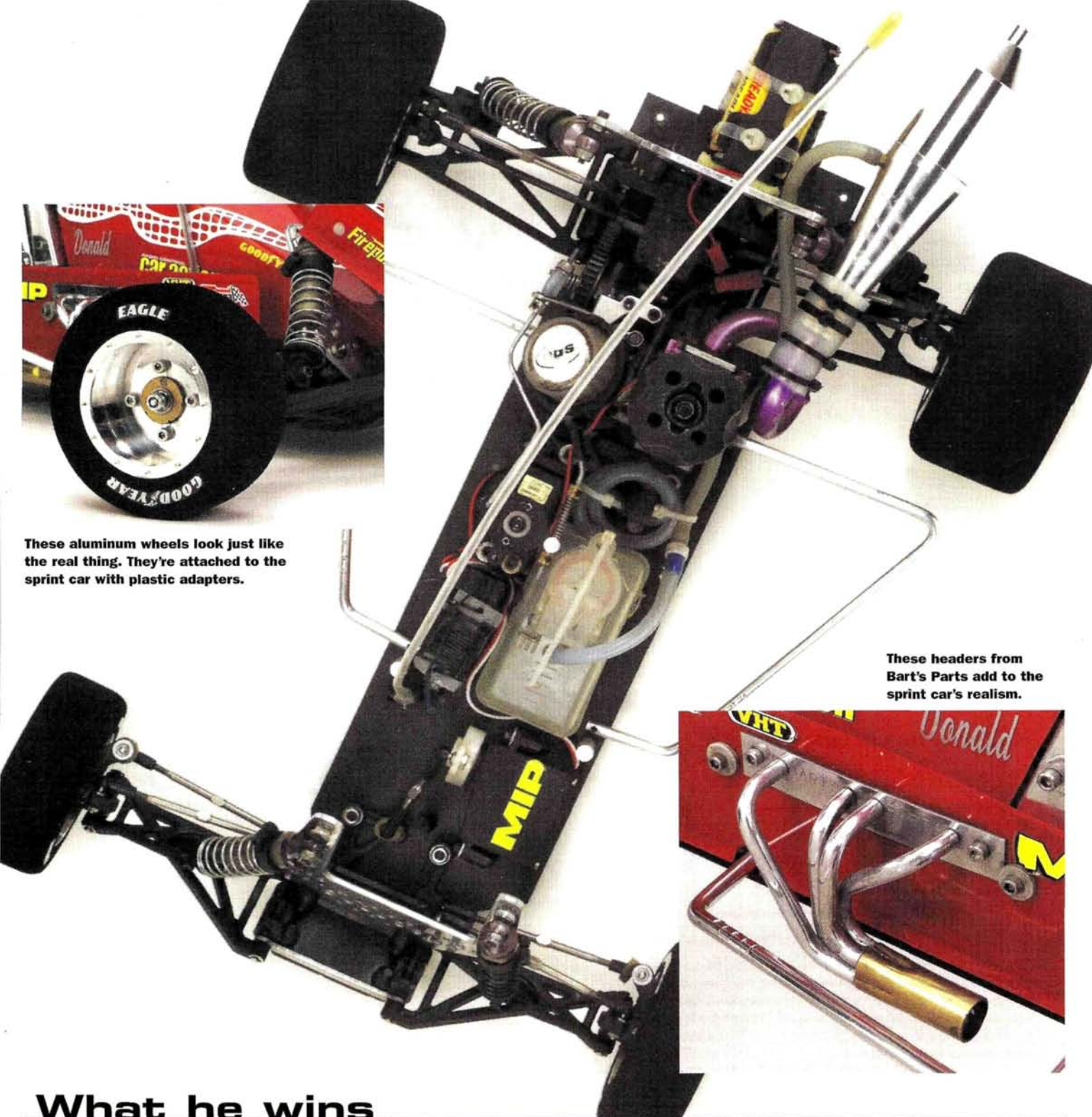
The wing mounts and driver's shield were hand-made out of aluminum. The wing mount is fully adjustable. The aluminum roll cage is very sturdy and could withstand a serious crash.



A TOP engine gets this puppy moving! The linkages had to be reconfigured slightly because of the new throttle/brake-servo location.



These aluminum wheels look just like the real thing. They're attached to the sprint car with plastic adapters.



These headers from Bart's Parts add to the sprint car's realism.



What he wins



Donald Cowart will receive a \$500 gift certificate from DuraTrax, which he can use to purchase all sorts of DuraTrax stuff, like an XL Deluxe field bag, Power Shot motor spray, Competition shocks, Rapid Heat glow-starters, or one of DuraTrax's RTR vehicles. If it's DuraTrax—it's Donald's. Congratulations!

Tamiya Airbrush Systems

Pro paint equipment by Greg Vogel



“How'd you do that?" That's one of the questions I'm most frequently asked

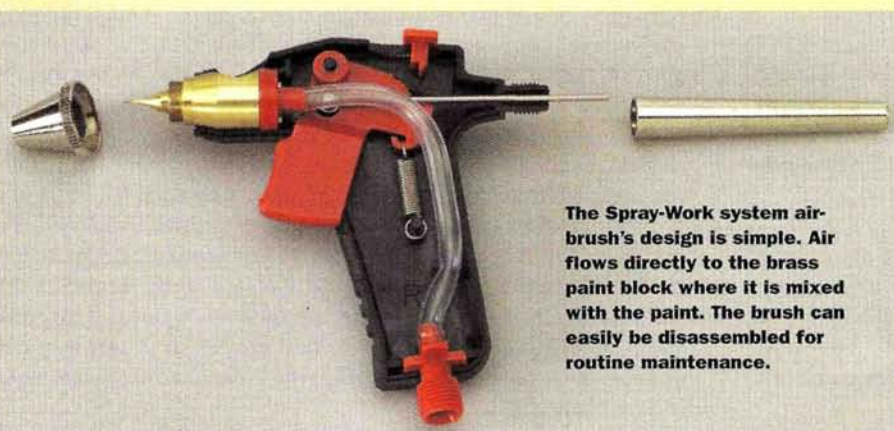
whenever I show up at the track with a freshly painted body. When I paint, I like to get a little fancier than applying just a few colors and stripes: I like to fade, spatter and highlight areas of the body to make them "pop" and grab your eye. But when people hear that I use an airbrush to create my work, they often say, "I'll stick with the can." If you're nodding your head right now, be prepared to change your opinion because I will show you how easy airbrushing can be with Tamiya's* airbrushes and airbrush system. There are three models in Tamiya's Spray-Work line: the Airbrush System Set gives you just about everything you need to airbrush; the HG Trigger-Type is a gun-type airbrush; and the HG is the top-of-the-line model.



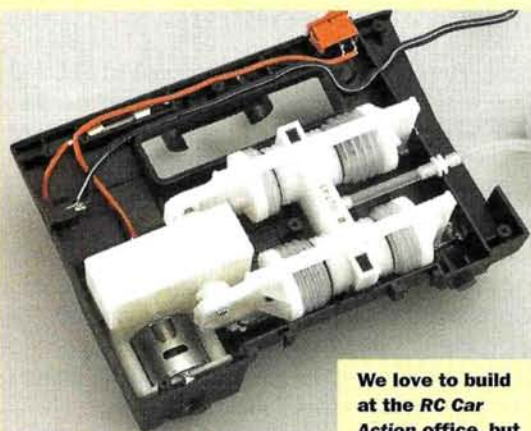
The HG and HG Trigger airbrushes do not come with hoses. Tamiya sells this adapter for use with a Badger air hose, which can be found in just about any hobby and art supply store.



The Spray-Work kit (part no. 74501, \$145 retail) comes with everything you see here. The hose and battery cable can be stowed inside the compressor and are secured with the cap you see next to them. Two tips are supplied—fine and wide.



The Spray-Work system airbrush's design is simple. Air flows directly to the brass paint block where it is mixed with the paint. The brush can easily be disassembled for routine maintenance.



We love to build at the RC Car Action office, but we also like to take things apart—even when we're not supposed to! The compressor was the latest victim of our curiosity. Check out the quadruple-bellow system that keeps air pumping smoothly; other piston-type compressors "pulse" out the air instead of providing a steady flow of paint.

AIRBRUSH BASICS

An airbrush is simply a tool that lets you control paint flow and airflow; this enables you to spray on a precise pattern. An air hose attached to the base of the brush delivers air from a compressor or a propellant can. Inside the brush, airflow is regulated by an external trigger. Paint is provided by a feed cup or bottle mounted on the front of the brush, and a needle assembly meters the paint's flow. The needle tip's size and shape determine the paint's spray pattern, and a variety of tips are available for stylized effects and for shooting different types and viscosities of paint.

On a typical airbrush, the air flows through the handle and draws the paint either from a siphon jar or a gravity-feed cup. The paint is atomized as it leaves the tip of the airbrush.

Three basic types of airbrush:

- **Single-action.** You control the airflow only; the paint flow is fixed.
- **Dual-action.** You control both airflow and paint flow.
- **Internal/external mix.** The paint is mixed with air inside or outside the gun.

TAMIYA SPRAY-WORK AIRBRUSH FEATURES

- **Airbrush System Set.** This set contains an air gun with a paint cup, a hose, a portable compressor, a spare jar for mixing paint and clips to hold the battery and store the airbrush when it isn't being used. All you need are a 7.2V stick battery to power the compressor and some paint.

The plastic brush's body contains the vital components, such as the air block where the air and paint are mixed, the needle, the trigger and the air hose. The airbrush "body" can be easily disassembled for cleaning and routine maintenance.

Two tips and nozzles are supplied for fine and wide spray patterns. A small supplied wrench loosens the nozzle so

you can change the tip. A small button on the top of the brush helps you maintain a particular air setting. Simply click the button forward until it stops the trigger at the setting you desire. Now, every time you pull back on the trigger, it will spray the same amount of paint.

Airbrushes require air so they need an air compressor or a propellant can of air. The Airbrush System Set has a built-in air supply. The compressor runs on a standard 7.2V stick-type battery—the same battery as you use in an electric RC car. Inside, an electric motor rotates a plastic cam that activates a 4-bellows pump system. With four bellows, the airflow from the compressor is much smoother than

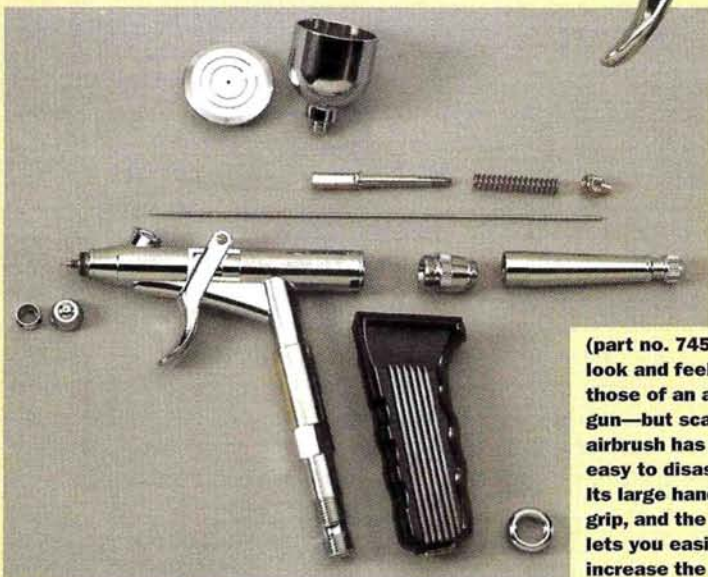


The HG Trigger airbrush's

(part no. 74510, \$200 retail) look and feel are similar to those of an automotive spray gun—but scaled-down. The Trigger airbrush has more parts but is easy to disassemble for cleaning. Its large handle provides a good grip, and the pivot on the trigger lets you easily and smoothly increase the paint flow.

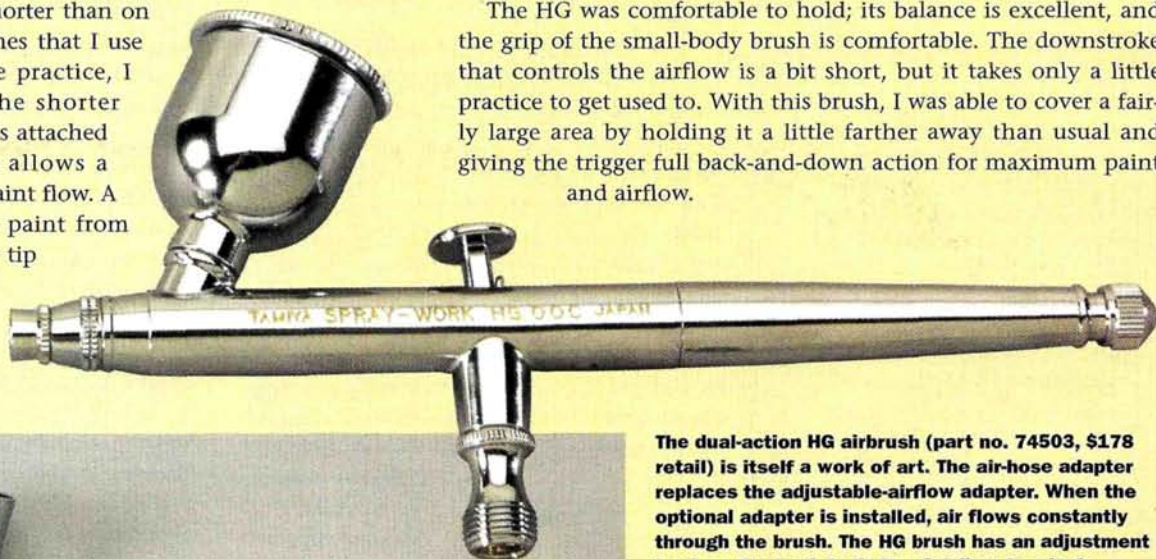
that of single bellows that pulse. The battery plugs into a Tamiya connector on the compressor and is clipped to the base. The compressor operates for up to 20 minutes on a fully charged pack. An on/off switch allows you to shut off the compressor when it isn't in use (unlike other compressors that must be unplugged from the electrical outlet). A C-clip on the compressor's handle holds the brush vertical when it isn't in use. This little clip comes in handy when you have a full jar of paint and need to put it aside.

- **HG Trigger-Type Airbrush (HGTT).** The HGTT is a single-action airbrush that is a step up in performance from the one included with the Airbrush System Set. It has a polished, cast-alloy body and a plastic handgrip, and it requires a compressor, an air source and a

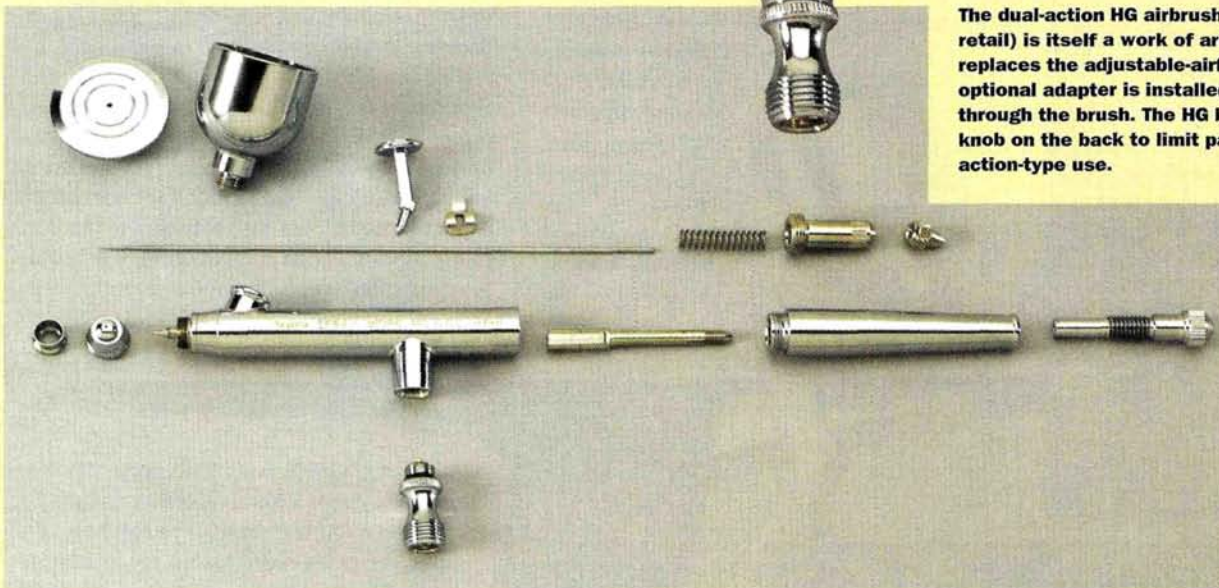


hose. The HGTT has a metal external trigger and a metal gravity-feed paint cup. The removable tip and needle can be changed with optional pieces. The brush has an automotive-gun feel and is perfect for people with large hands who find a small brush grip uncomfortable to hold.

• **HG Airbrush.** The dual-action HG is the mother of Tamiya airbrushes. Its narrow polished-alloy body feels comfortable to hold (for me, at least). A knob on the brush's rear limits paint flow, so its spray is more like that of a single-action brush. The dual-action trigger controls paint and airflow; pull back for paint and press down for air. I found the downstroke for air to be a tad shorter than on the Aztec and Badger brushes that I use regularly, but with a little practice, I became accustomed to the shorter movement. The paint cup is attached to the brush's top. This allows a smoother, more constant paint flow. A reservoir cap prevents the paint from spilling, if you accidentally tip the cup or need to swing the brush around as you paint.



The dual-action HG airbrush (part no. 74503, \$178 retail) is itself a work of art. The air-hose adapter replaces the adjustable-airflow adapter. When the optional adapter is installed, air flows constantly through the brush. The HG brush has an adjustment knob on the back to limit paint flow for single-action-type use.



IN USE

I fired up the unit and let several people in our office try it out. The first item they sprayed was a plane for our *Model Airplane News* magazine. The plane guys used the wide tip and sprayed the entire plane with red Parma® FasKolor paint with great success. Thanks to the quad-bellows compressor, the plane was covered in a nice even coat of red without any dark areas of excess paint. Single-piston compressors pulse the paint, and that can cause inconsistent paint application; this wasn't the case with the Tamiya system.

Next we used the gun on a car body and again finished with impressive results. With this system, I was able to spray the thicker Parma FasKolor water-based paint with ease. I could spray fades with the fine tip and then cover large areas with the wide tip. When I had finished, I took the brush apart for cleaning;

FasKolor paints require only water for clean-up, so the Spray-Work brush was clean in a matter of minutes; just don't drop the needle because if you bend its tip, the brush won't work properly.

I had never used a trigger-type gun except for the Spray-Work gun I tested first. It takes a little getting used to, but I got the motions down pretty quickly. I find it's easier to spray large areas with the gun because it requires less control. It's personal opinion, though, and it shouldn't affect your decision on which brush to buy. The needle supplied with the HG Trigger-Type brush produces a good fade and covers large areas, but if you expect to do precision work, you'll need an optional needle assembly.

The HG was comfortable to hold; its balance is excellent, and the grip of the small-body brush is comfortable. The downstroke that controls the airflow is a bit short, but it takes only a little practice to get used to. With this brush, I was able to cover a fairly large area by holding it a little farther away than usual and giving the trigger full back-and-down action for maximum paint and airflow.

When I wanted to do fine work, the HG shone: I was able to highlight areas with precision. The brush worked well in all situations, but cleaning it involves a little more time under the faucet.

Putting the HG brush back together is also time-consuming. Be certain to memorize how it comes apart; reassembling the trigger-lever tab (the spoon-shaped piece behind the trigger) can be difficult.

THE VERDICT

Each Tamiya airbrush is perfect for its intended use. The Airbrush System Set is a great value for someone who doesn't have any equipment, and its compressor is a thousand times better than using a can of propellant or a single-piston compressor. The HG Trigger-Type is ideal for the large-handed painter who just wants to lay on a coat of paint with the option of doing finer work, such as a fade, later. The HG set is a body artist's dream—perfect for someone looking to advance to a precision airbrush.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■

by Greg Vogel and Derek Buono

Traxxas 4-TECs make ROAR Nats A-main

The 2000 ROAR On-Road Fuel Nationals, held at Texas Motor Speedway in Fort Worth, TX, proved to be an eventful race. Yokomo team drivers Barry Baker and Chris Tosolini took first and second place, respectively, in the 1/10-scale touring-car class—not surprising, considering that these two drivers are at the top of their game. What was surprising, however, was that two privateers with Traxxas Nitro 4-TEC Pros made it into the highly competitive A-main. Traxxas doesn't sponsor racers, so it's rare to see Traxxas vehicles at a ROAR national championship.

Steve Slayden and Damon Darnall, who happen to be customer service reps at Traxxas, decided to compete at the event just for the fun of it, and they ended up finishing in third and eighth places in the A-main. Maybe Traxxas will think about a return to sanctioned racing—T-Maxx Nats, anyone?



Adam on the eve of a new career

Team Losi's Adam Drake just upped and moved from Ann Arbor, MI, to Irvine, CA, so he could be closer to the big-time racing scene. This man is such a diehard racer that he even landed a job in Team Losi's R&D department. Now that "The Drake" is in California, he plans to race at as many tracks as he can in both the nitro and electric classes with his Trinity-powered Losi vehicles.



Mike Dumas's Tour de Japan

Here's a story that didn't make it into our IFMAR On-Road Worlds coverage. We heard that Associated/Reedy driver Mike Dumas played "musical trains" as he tried to find the Yatabe arena. Maybe if he had learned a little more Japanese than "Domo arigato, Mr. Roboto," he could have made it to the track on time. (But at least he saw Japan. All of it.) Mike was eventually located and brought to the track, where he promptly got sick and went home. Hey, don't worry about it, buddy; airfare's cheap.

Losi Tires tops in 2000

If you're like most racers, you check out the winners' charts in our race coverages to see which radios, batteries, speed controllers, etc., were the most popular. You probably don't collate the data for an overall look at the year, but you do if you're in the tire business. That explains why Team Losi sent us a press release announcing that Losi tires were used to win every electric off-road ROAR national championship in the year 2000—a feat also accomplished by Losi rubber in 1999. Nice work on the tires ... and on the record keeping.

BAREFOOT BOB

While attending the IFMAR Worlds in Japan, Bob Novak of Novak Electronics reported his shoes missing on leaving a Japanese restaurant. If you have seen Bob's shoes, please email gregv@airage.com; we'll forward any information on the whereabouts of his shoes to him. In the meantime, we'll keep an eye on eBay.



HORIZON HOBBY ACQUIRES TEAM LOSI

It's true; Horizon Hobby, best known as the distributor of JR Racing radios and the Dynamite line of fuel, engines and accessories, is the new owner of Team Losi. We'll let Horizon and Team Losi take over with the official press info:

"Horizon Hobby, a premier distributor and marketer of high-end RC products, has purchased Team Losi Inc. Team Losi will continue to operate as it has through the years, but it can now concentrate on developing more innovative products. With Horizon's support and nationwide distribution network, more new products will get to you more quickly. Horizon is dedicated to dealers and consumers and would like to clarify the following points:

1. The Losi name means quality and innovation to racers

worldwide. Horizon wants that to continue and will not 'fix what isn't broken.' That's why the Losis are staying in California to focus on the racer market and produce new products that racers want—even faster.

2. Horizon is strong in marketing and will be working to get even more information out to you about Losi products via Horizon retailers, catalogs, quarterlies and through the Web.

3. Team Losi's factory racers have a critical job: testing new products and servicing old ones. They let Team Losi know how existing products are working, and which new ones the racers want. This job is important to Team Losi, and it does not foresee any changes. Losi will remain in charge of the race team and product development—just the way it should be.

4. Warranty work and technical support will remain at Team Losi in Chino, just as it is now."

SITE SEEING



www.VenturaRC.com

If you're into dirt oval, you have to click over to Ventura RC. This well-produced site has an excellent gallery of dirt oval cars and races, along with plenty of info to help you dial in your own outlaw outfit. Ventura RC covers off- and on-road racing, too, and it's definitely worth checking out.

SPEED SHOP

Mugen Seiki MBX RR upgrades

Since we're showing you Kris Moore's Mugen* MBX RR in this month's "Under the Hood," we thought we would show you some new Mugen hop-ups that even Kris doesn't have. The aluminum center diff mount is a two-piece clamp-type housing that allows you to pull the diff out from the top instead of pulling the entire mount out for diff maintenance. The rear tension rod is a must; it reduces the rear chassis flexing and can also prevent the engine from stalling when the chassis flexes enough to hit the flywheel. Mugen offers new gears for the RR to change the drive ratio, a 44-tooth spur and new conical and bevel gears. Installing the conical and bevel gears in the front can improve a car's speed exiting corners.

Aluminum center diff mount—C0186, \$109.99.

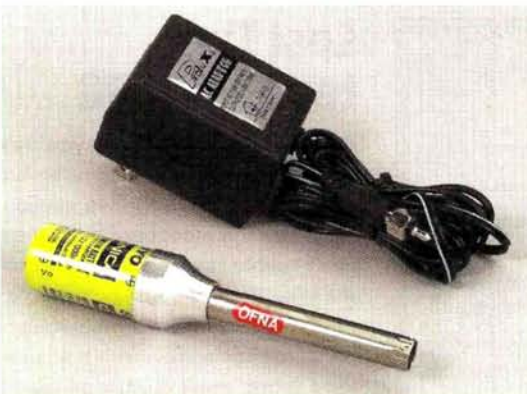
Rear tension rod—C0191, \$19.99.

Spur gear, 44T—C0274, \$39.99.

Conical gear, 38T—C0272, \$39.99; bevel gear for C0272—C0273, \$10.99.



OFNA 1300mAh glow starter



OFNA's* economical 1300mAh glow starter includes an overnight charger. Just give it a good 14 hours of charging before you use it, and it will deliver the power needed to get your engine running.

1300mAh glow starter w/charger—10200; \$23.95.

Pro-Line 1/8-scale "Dirty Harry" off-road tires

"Go ahead; make my Main." Pro-Line* chose "Dirty Harry" as the name for its new 1/8-scale off-road tires. With a very aggressive tread pattern, these tires should hook up on most surfaces. They fit any 1.5/4.5-inch rims and include foam inserts.

Pro-Line "Dirty Harry" tires—9015; \$18.99/pair.

OFNA Knife Edge Ream

OFNA's reamer will easily make holes from 3 to 14mm wide. The self-starting tip is a nice feature; it enables you to poke holes in Lexan without first starting the hole with a hobby-knife blade. The reamer's bit fits inside the handle for safe storage, and it's available in three anodized colors: black, purple and blue.

Knife Edge Reamer

(black/blue/purple)—10803/10804/10805; \$29.95.



Trinity 1/8 Bomb tire inserts

Trinity has Bomb inserts for 1/10 sedans, buggies, trucks and now, 1/8 buggies. The inserts are precision-cut to fit perfectly in any 1/8 tire and are available in soft, firm and two-stage versions. Trinity also offers special Bomb glue for the two-stage foams; the glue is extra tacky and remains flexible when dry so you don't get "hard spots" in the tire.

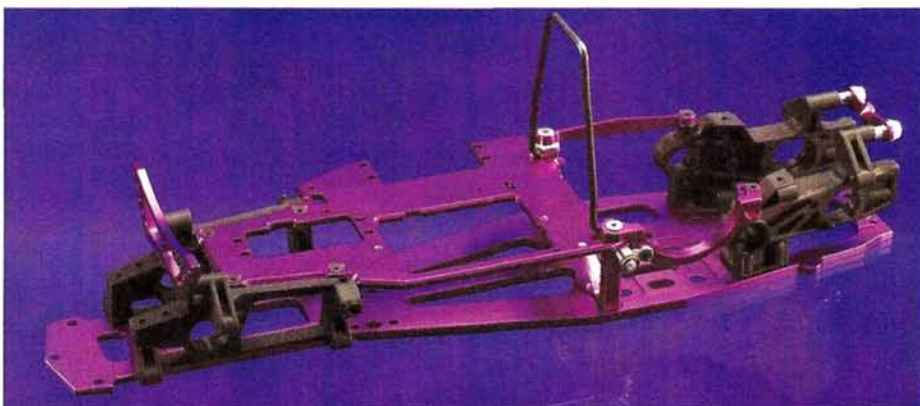
Bomb 1, soft insert—part no. TK1525, \$6.99; Bomb 2, firm—TK1529, \$6.99; Bomb 2, dual stage—TK1527, \$7.99.

SPEED SHOP

Bruckner Hobbies flywheel wrench

Have you ever tried to tighten a clutch nut, but you can't find pliers big enough to do the job without chewing up the flywheel? Bruckner Hobbies* now offers this handy little tool to clamp down easily on a flywheel of any size. Twist the bottom knob to increase the size of the loop then tighten it down; the flywheel won't move. It's a handy addition to any nitro-engine mechanic's toolbox, and when you've finished with your engine, you can open some jars for your mom.

Flywheel wrench—call for information.



Wolfpack hop-ups for the Serpent Impulse

Wolfpack Radicals* offers hopped-up chassis parts for the highly popular Serpent Impulse. The main chassis is machined from stiff 4.75mm 6061T6 aluminum and is available in purple and silver. The radio tray relocates all the electronic gear except for the steering servo. With the new design, weight distribution is reportedly improved, which results in better, more consistent handling. The front shock tower, side braces, radio-tray support and rear suspension brace are all machined of stiff aluminum.

Radio tray conversion kit—WLF042, \$69.99.

Chassis (4.75mm)—WLF042, \$69.99.

Front shock tower—WLF040, \$19.99.

Side braces—WLF037, \$28.99.

Radio tray support—WLF038, \$69.99.

Rear suspension brace—WLF029, \$22.99.

Metric Phillips-head screw set



This new, 200-piece screw set from DuraTrax features all of the common Phillips-head fasteners packed in a 7x3.5-inch jewel box with 10 separate compartments. The assortment includes 2, 2.6 and 3mm self-tappers; 2.6, 3 and 4mm machine screws; and corresponding nuts and nylon-insert locknuts. The individually marked zip-type storage bags come in a sturdy see-through container, and the ID card inside the lid helps you to find the exact screw piece you need. We found that even using excessive pressure, the hardened screw slots resisted rounding. DuraTrax offers similar metric hardware sets in both socket and flat-head design packs as well.



Metric Phillips-head screw set—DTXQ0100, \$15.99.

Metric socket-head screw set—DTXQ0125, \$15.99.

Metric flat-head screw set—DTXQ0150, \$15.99.



GS Racing silicone wire and fuel tubing

GS Racing* now offers a line of silicone-insulated wire and thick-walled fuel tubing. The wire is a hefty 12 or 14 gauge that is super flexible and reduces current loss. Both gauges come in 10 colors and are sold in 3-foot lengths. The thick-walled glow-fuel tubing is available in 12 colors and in three sizes: 5/64, 3/32 and 1/8 inch (i.d.), and it's also sold in 3-foot lengths.

Giga-V 12AWG Ultimate Wire—GS-W12T3; \$1.99/3 feet.

Mega-V 14AWG Ultimate Wire—GS-W14T3; \$2.99/3 feet.

Super-C silicone fuel tubing (5/64/3/32/1/8)—GS-24-48-3S/GS-24-55-3S/GS-24-60-3S; \$1.89/3 feet.

5 QUESTIONS

Age: 34

Favorite class: 1/12 mod

Home track: The Dirt, Hemmit, CA

When I'm not racing:

I enjoy motorcycles and hanging out with my pals

Sponsors: Mugen Seiki, KO Propo, O.S., MIP, Pro-Line, Moore's Welding


Kris Moore

Radio Control Car Action: What's your best rabble-rousing-racer story?

Kris Moore: Umm ... err ... a friend—yeah, that's it, a friend—during the Worlds in Romsey, England, was going really fast in a van around the "roundabouts"—probably twice as fast as he should have. Well, he was jerking the wheel back and forth, and one of the passengers went through the side window of the van. Somehow, thankfully, he wasn't hurt. But what was even better was that this friend had borrowed the van from some Japanese racers, and they had to pay for the damages.

RCCA: Now that you're the general manager of Mugen Seiki USA, is RC still a fun hobby for you, or is it more of a job?

KM: At first, it was my hobby, but the longer I work here, the more I feel like my hobby has become my job. I don't get to spend as much time racing as I did before. Don't get me wrong; I still enjoy both.

RCCA: When a beginner approaches you and wants the top-of-the-line Mugen, do you push the sale?

CM: That's the last thing on my mind. I want people entering the hobby to have a pleasurable first experience. Getting the full factory ride for their first vehicle isn't always going to turn out to be a good experience, especially with nitro. I usually recommend that newcomers start with electric to get a feel for things, but if they insist on nitro, I tell them to go for a less expensive car first, so they don't spend big money on something they might not be happy with in the future.

RCCA: At races, is it difficult to balance the work you have to do on your car and race strategy with your responsibilities to Mugen racers as a Mugen representative?

KM: No, I don't find it difficult; I've always enjoyed helping out other drivers. I don't think I take racing as seriously as I did before, so I like talking to racers when they ask me for advice.

RCCA: Do you drive conservatively, or do you go out and try to lay down the power?

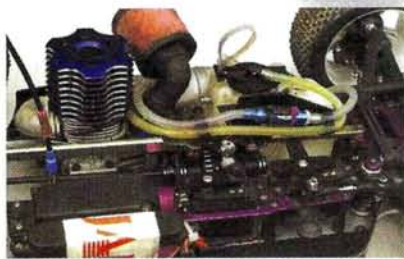
KM: I drive as hard as I can at all times. During practice, I may push the car to 75 percent of my ability, but when it comes to actual qualifying and the Mains, I give it all I've got—no holding back; it's all about going as fast as I can go. If I held back, I'd probably crash more.

UNDER THE HOOD

KRIS'S HARD-CLAY SETUP


Kris Moore's clay setup features 1,000WT rear diff oil, 300WT in the shocks and an optional rear tension rod.

Aside from a few mods to increase suspension travel, the MBX 4RR is pretty stock.



For power, Kris chose the O.S. RZV99B engine with an 086 pipe and manifold.



FACTORY OPTIONS

- fuel filter—part no. B0103 ■ aluminum front tension rod—C0177
- aluminum rear tension rod—C0179 ■ universals (F/R)—C0260
- center universal (F/R)—C0262/C0261 ■ fiber brake disc—C0303

HARD-CLAY SETUP

	FRONT	REAR
Upper-arm position	2mm	—
Camber	-1°	-2°
Toe-in/out	1° out	A: 1.5mm; B: 2mm
Bump stop	Use	Use
Swaybar	2.1mm	2.6mm
Shocks		
—fluid	400WT	300WT
—piston	1.5mm hole	1.5mm hole
—spring	Stock	Stock
—spacer	7mm	8mm
—mounting location		
(upper/lower)	Second inside top/middle	Second inside top/middle
Camber-rod location		
(hub/bulkhead)	—	Top middle/inside middle

MODIFICATIONS

- Material was removed from the front steering knuckles behind the pivot balls to increase suspension travel and steering.
- Front-end width with Pro-Line tires: 273mm.
- Diff oils: 3,000WT (front); 7,000WT (center); 1,000WT (rear)

EQUIPMENT

- RADIO:** KO Propo Mars
- SERVOs (THROTTLE/STEERING):** KO Propo 214
- ENGINE:** O.S. RZV99B
- PIPE:** 086 pipe/manifold
- FUEL:** O'Donnell 30 percent
- TIRES:** Pro-Line Dirty Harry
- WHEELS:** Stock
- INSERTS:** Pro-Line



HOT MOD HOW TO

RC10GT RECEIVER PROTECTION

We nabbed this "how to" from Regan LeBlanc, Richard Saxton's mechanic. He explained that the new GT chassis offers very little protection for the receiver because it does not have the protective "wall" that the old tub chassis had. Regan came up with a quick, easy and effective way to protect the GT's receiver from impacts.

YOU'LL NEED

- a piece of plastic, fiberglass, or another thin, rigid, shatter-resistant material
- two short 4-40 screws
- a drill



■ **STEP 1.** Cut your receiver-guard material to approximately 4.5x1.25 inches. We used a piece of Kydex bumper material from Parma; an old chassis is another good source of scrap material.



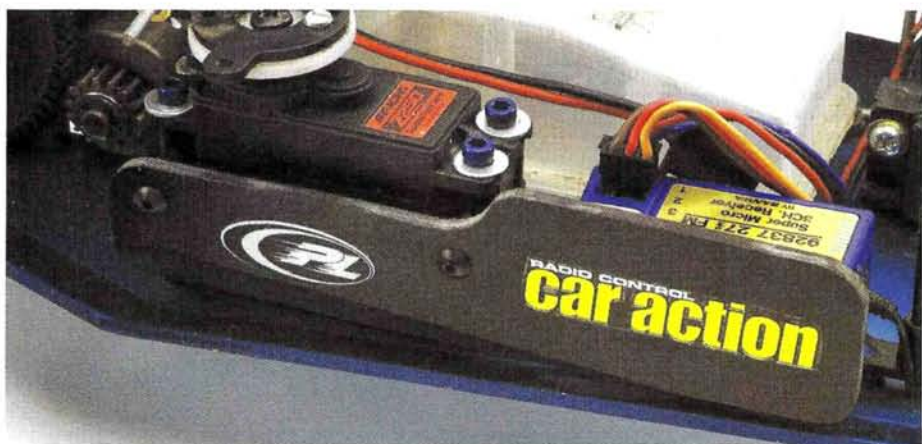
■ **STEP 2.** Remove the throttle servo but leave its mounts on the chassis. Hold the plate up to the two bosses that protrude from the throttle-servo mounts, and trace around the bosses with a marker.



■ **STEP 3.** Make a hole in the center of each tracing with a $\frac{3}{32}$ drill bit.



■ **STEP 4.** Using two short 4-40 screws, screw the plate to the servo posts.



Now if you crash into the boards or get T-boned by another driver, the receiver will be less likely to sustain damage. Oh, yeah; the new plate also makes a great decal billboard.

LAST LAP

What is the best RC video game or simulation you've ever played?

I would have to say the DuraTrax RealRace simulator. It's cool and fun.

—Andrew Fitzpatrick

There is a cool game made by Acclaim called *ReVolt*. It has all of the styles used in the RC hobby: buggies, monster trucks and touring cars, both gas and electric. This game really incorporates the basic fundamentals of jumping and control. For the price, it is one heck of a bargain. You get newer and faster cars as you race in various scenes and locales; you can even create your own track so you can race your buddies or the computer. I forgot to mention that the cars can be either 2- or 4WD. This game rocks.

—Christian Olivas

Sierra's *3D Ultra RC Racers*. This game has it all. It has qualifying heats and A through D mains. Definitely cool stuff—and lifelike. Plus, it offers common RC racing vehicles such as off-road buggies, stadium trucks, monster trucks and Baja Bugs. And you can upgrade as you win. Definitely worth a look.

—Kenneth Rodriguez

ReVolt—even though it doesn't let you use a pistol-grip radio. It responds quickly, like an RC vehicle. Also, you hit stuff; just like the real thing.

—Howard Chen

RC Racers for the PC is the best RC video game I have played. I like it because the view is from the drivers' stand, and the tracks are like those that can be made at home.

—Eric Norris

The best RC video game I've ever played would have to be *ReVolt*; I think it's pretty cool. I hope that Nintendo or some other company will make more RC games; they rock!

—Chad Campbell

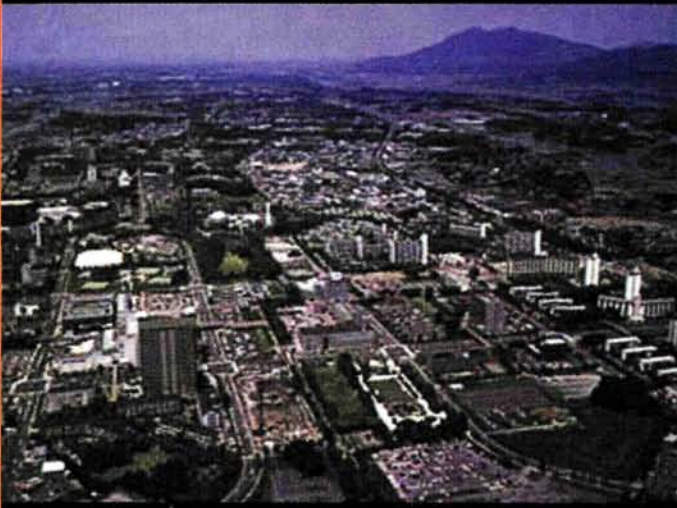
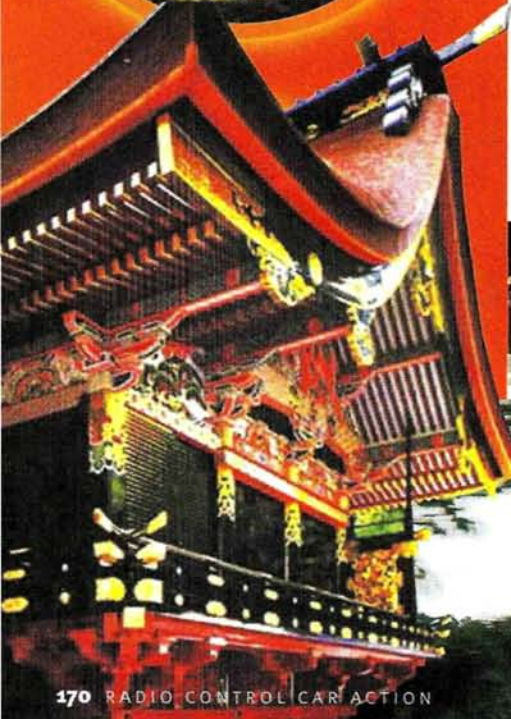
NEXT MONTH'S QUESTION

What is the one piece of equipment in your toolbox or pit bag that you couldn't live without?

Email your responses to

gregv@airage.com.

Type "Last Lap" in the subject box, or log on to "Last Lap" at www.rcaraction.com.



Left: the praying mantis became a track-side companion. His wisdom and good luck didn't seem to work, so he took matters into his own hands and adjusted the chassis tweak on David Spashett's car.



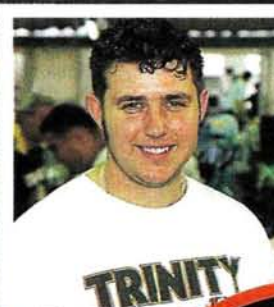
2000

ELECTRIC ON-ROAD WORLDS





Below left: Hara enjoys the victory of the first International Scale Touring Car World Championship title. Right: Masami enjoys yet another Pro-10 World Championship title. I think Masami had enough trophies to sponsor the race.



Team Trinity's David Spashett was all smiles before the start of the 1/12-scale Mains. This all changed after the event. He had the best chance of defeating Masami on his home track.

Yokomo takes all!



HARA



MASAMI



IFMAR

THE 2000 IFMAR 1/10, 1/12 AND INTERNATIONAL SCALE TOURING CAR (ISTC) Electric Circuit World Championship was held in Tsukuba City, Japan, and it had some of the most exciting racing action ever. The world's best drivers traveled across the globe to battle for the title of world champion. Not only were there nine exciting days of racing, but also some major controversies surfaced. I traveled to the land of Pokémon to cover the event, and I brought home all the inside dirt about what went down.

by Derek Buono



Jon Orr didn't have the best racing luck, so he decided to pray for some.





The first turn claimed its share of cars. Action through this section was always exciting.

RACE FORMAT

• **Qualifying.** Since the Worlds is an IFMAR event, it's only fitting that IFMAR qualifying is used. For those unfamiliar with this form of qualifying, it eliminates first-corner pileups and minimizes battles for the lead. The drivers start at intervals and race the clock, instead of each other. It isn't the most exciting qualifying format for spectators, but it does provide all drivers with an equal chance of qualifying.

The best four out of six qualifying heats determine the racers' positions in the Mains. Each heat is run as a separate race. The top qualifier in each heat receives 155 points; second earns 153 points. Each succeeding qualifier earns a point less than the one before. In the event of a tie, the winner is the racer with the highest score for an individual qualifier.

• **Mains.** Triple A-Mains determine the winner in each class. Every Main's winner receives 10 points, second place nine points, third place eight points, and so on. Winning the first two Mains would result in a perfect 20 points, and the driver has the option of sitting out the last Main. The top point scorer is the overall winner.

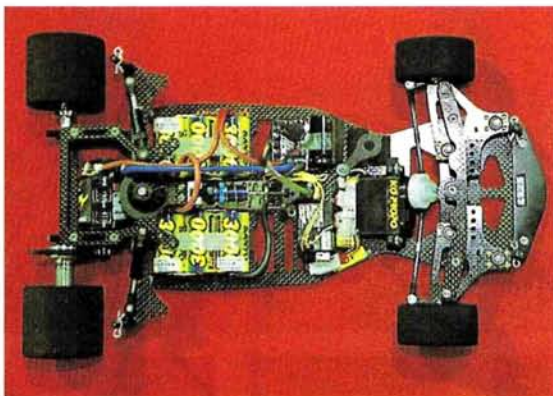
PRO-10 QUALIFYING

Once the dust had been pushed to the outside line, the large track with its long, wide straights made for some impressive top speeds. The fast line was very narrow, and if anybody veered too far out, it meant a total loss of traction and a free ride into the boards. Masami Hirose came out on his home track and immediately put down some fast times with his Reedy-powered Yokomo YRX-2000. He surprised us by choosing a different tire from the one he used during the warm-ups. It seemed to be a well-calculated ploy to make every other driver use a tire that didn't have the consistency of his pink compound. After six rounds of qualifying, Masami was on the top of the pile with his three 21-lap performances to claim a perfect six-round TQ. The only other driver to turn 21 laps was Diasuke Yoshioka. With Hideo Kitazawa in third, the Japanese drivers held the top three positions, and they were followed by Barry with his Trinity-powered Switchblade 10. Chris Tosolini, Jon Orr and Mike Blackstock rounded out the American force.

• **A-Main 1.** The stage was set for a classic battle—just like Godzilla versus King Kong. The Japanese had the numbers to pressure the top American drivers. Masami had dominated during the qualifiers, and the first Main would turn out to be no different. Masami led from the tone, and he never looked back.

Action at the back of the track was more interesting. Tosolini was ejected on the first turn and didn't even cross the timing loop. As Masami opened his lead, Yoshioka, Kitazawa, Atsushi Hara and Baker battled for the second position. It wasn't long before the track dots claimed some victims and shuffled the field. Masami cruised to the first victory with 21/4:10.32, followed by Yoshioka and Kitazawa.

• **A2.** If anyone was going to be a challenge for Masami, it had to happen in the second Main. Challengers had to make a run for it to stay in contention for a podium appearance. Once again, Masami showed the field the rear of his car as he took the lead from the start. Baker, Kitazawa and Tosolini followed behind. Baker had some distance on Kitazawa and Tosolini. Masami again checked his car out at the door and left the field behind while Baker did everything but break his radio's trigger to try to catch Masami. The real battle shaped up in the back of the pack between Tosolini and Kitazawa. Tosolini was all over Kitazawa—trying to pass on every corner. Tosolini would stick his nose in, and Kitazawa would shut the door. The display went on for a good two minutes.



Masami Hirose's winning YRX-2000. Masami used a Reedy motor, Yokomo Sanyo 3000s and a GM ESC to dominate the Pro-10 event.

WORLDS' CONTROVERSIES

■ **CONTROL TIRE CONTROVERSY.** Control tires debuted at the 1998 Worlds ISTC exhibition race in Britain, but the 2000 tire policy drew criticism. Three tire brands were submitted as possible control tires to IFMAR, which then turned the decision over to track operators. They designated the Yokomo Hot Lap as the control tire. Most racers disagreed with this decision because the Yatabe Arena track is Yokomo's home track and primary test facility. The other drivers felt that the Hot Lap tires gave Yokomo team drivers an unfair advantage, since they had already had a lot of testing time on the track.

■ **THE CARPET CONTROVERSY.** This was a hot topic of discussion, not only during the race but also at several IFMAR meetings during the event. Normally, the 1/12- and 1/10-scale classes run on carpet. This means there is little advantage to practicing on the actual World's track surface because its Ozite carpeting

is used on tracks worldwide. Shortly before the race, it was decided that all the classes would run on the track's existing asphalt surface. This surface had not been prepared prior to the start of the 1/10-scale event. In the qualifying rounds, there were more cars sliding off the track because of lack of traction than there were actually turning fast laps. If a traction compound had been applied, or even if the track had been vacuumed, traction would have been much higher, and drivers would have been able to concentrate on driving. Since it is their home track, Masami, Kitazawa and Yoshioka had had lots of experience on the surface, and they knew which tires and chassis setup worked best. Instead of wasting the qualifying runs on setup experiments, they were able to make the fine adjustments required for the best possible run in the Main, and they quickly climbed to the top 10. This was unfair to drivers who hadn't been able to practice regularly on this surface. The decision to

Tosolini had several chances on the inside, only to be denied. It was the most impressive battle of the Pro-10 event, but Masami wasn't able to watch it because he was busy stretching his lead. With a huge lead, he clinched the victory with 21/4:4.12.15 for a perfect performance and another Pro-10 World Championship. Baker and Kitazawa occupied the next two positions.

- **A3.** Masami watched from the sideline as the battle for second and third unfolded. Even though several other drivers still could have claimed second, both Baker and Yoshioka had the best chance for the number-two spot. At the buzzer, Yoshioka led the pack across the timing loop followed by Baker and Kitazawa. Kitazawa overtook Baker for second place, and a freight train of second through fifth quickly formed. Yoshioka never looked back and took the third final with 21/4:10.56, followed by Kitazawa and Baker. Yoshioka took the second overall position with the 21-lap victory.

1/12 SCALE

- **Qualifying.** This was the first class in which Masami actually looked beatable. The word in the pits was Masami was a ringer to win. Masami clinched the overall TQ position by winning three of the six qualifiers and out-qualifying David Spashett and Kitazawa on the starting grid. Some drivers needed an extra qualifier to get up to the 32-lap pace Masami was consistently turning. Once the cars had been dialed in and the drivers understood the lack of traction, qualifying heated up. Was this the class in which Masami would be



- **A-Main 1.** The race for the first turn proved to be too intense for Masami. He launched his car off a dot and lost huge ground to David Spashett who happily took control of the race. Youngster Tayuka Ito followed, and Josh Cyril tucked his car into third. Spashett opened a straightaway lead early. The Ito/Cyril battle continued until a corner dot leapt out at Cyril and removed him from third place. Meanwhile, Masami must have taped his trigger wide open, as he strategically made his way up through the pack to second after only two minutes in the race. Because Yoshioka and Ito had taken each other out of contention, the real question was whether Masami could last the entire eight minutes after such an early charge. With a three-second lead, Spashett worked his way around the track with Masami within striking distance. All

dethroned? Or would the "Little Dragon" pilot his Reedy-powered Associated car to the top again?

Spashett had to do was continue to navigate the track and avoid lapped traffic. With one minute left, a crashing car crossed Spashett's path and held him up long enough for Masami to pose a serious threat. Spashett barely crossed the timing line in front of a hard-charging Masami to claim the first Main with 33/8:14.25. He was followed by Masami and Yoshioka.

- **A2.** The announcer caused a driver to jump the gun, but no action was taken. After the final 10-second announcement, the next sound the drivers listen for is the start tone. A short blurb from the announcer caused some drivers to react. Not affected by the false start, Masami took the lead through the first corner. Then, in the second corner, Kitazawa wiped Spashett from the track, as he just simply didn't look to turn the corner. Trackside tempers flared, since it looked like an intentional takeout. Masami was definitely the benefactor of the crash. After regrouping in the fourth position, Spashett played catch-up. He quickly passed Ito and took the third position, and



Above: average temperature and humidity inside the arena—97 degrees F and 98 percent humidity. According to the heat-index scale, the apparent temperature in the building was over 135 degrees. Now, that's hot!
Left: Masami's winning Associated/Yokomo 12L3. Again, Mike Reedy gave him the power with a Reedy 10-double to win the 1/12-scale title.

run on the tarmac gave an instant advantage to those local drivers and Yokomo team drivers who make Yatabe their home track.

■ **THE WEIGHT CONTROVERSY.** The 1/12-scale event ran with 4 cells and modified motors. The weight requirement, however, wasn't lowered to compensate for fewer cells, and drivers had to strap on more lead weight than deep-sea fishermen use. The weight wasn't a major issue, but some drivers were concerned that if they were to lose some lead during the race they would be disqualified in the post-race tech. Luckily, this never happened. Plenty of discussion ensued between the team managers and the IFMAR officials about changing this rule for the event, but unfortunately, the meeting to discuss these suggestions was not held until after the 1/12-scale event.

■ **THE TEAM-DRIVING CONTROVERSY.** After David Spashett won the 1/12 A-Main, Masami's invincibility was in question; it looked as though the Brit had a legitimate shot at winning. This is where the race took a sour turn. At the end of the straight, after the starting grid, there was a 90-degree left turn. As Spashett set up for the turn, he was

sideways by Masami's teammate Kitazawa. The turn was tight, and Spashett had already committed to his line. As Spashett hit the turn's apex, Kitazawa seemed to broadside the helpless Spashett. Even though crashes occur often, especially at the beginning of a race when nerves play a big part, this mishap had the look of a blatant hack. Many found it hard to believe that a world-class driver could miss a turn by such a wide margin.

The next incident occurred as Spashett made his way back through the pack and was again working to pass Kitazawa. This was a move for position, so pulling aside for the faster driver wasn't an option. There wasn't anything wrong when Kitazawa blocked Spashett from the second position, but when Spashett made a move, he was again tapped into the boards. Even though the crowd protested loudly, the drivers weren't given warnings. From the crowd's reaction to the crashes, it seemed as if Kitazawa wasn't driving to win but to prevent Spashett from challenging Masami. Several opinions of the scenario were voiced in the pits, but during the taped replay of the race, the unanimous response to the first corner connection was a cringing "Oooh!"

DAI ICHI HOTEL VS. THE SKY HOTEL

In my journey to cover the 2000 Electric Worlds, I had the pleasure of experiencing two very different styles of hotels. They were within two miles of each other, but they had totally different concepts of hospitality.



DAI ICHI HOTEL: Lobby was full of business people.

SKY HOTEL: Lobby was full of racers holding, "I didn't make it in the Main," socials.

DAI ICHI HOTEL: It was always nice to come back to a refreshingly chilly room.

Sky Hotel: It was always nice to return to a room like a blast furnace. I could have blown glass in there.

DAI ICHI HOTEL: The in-room fridge provided thirst-quenching refreshment.

SKY HOTEL: The vending machine in the lobby occasionally worked.

DAI ICHI HOTEL: The sink had its own drain.

SKY HOTEL: The sink drained into the tub.

DAI ICHI HOTEL: The laundry service washed my clothes and returned them promptly to my room.

SKY HOTEL: I washed my dirty socks in the stream out back.

DAI ICHI HOTEL: The staff slept at home.

SKY HOTEL: The guy at the front desk at 1 a.m. and was still there when you left for the track at 6 a.m. and greeted you as you returned at 8 p.m.

DAI ICHI HOTEL: The mall in the hotel had enough variety for any appetite...and there was always room service.

SKY HOTEL: Dinner was a short walk to McDonald's. You could bring it back to your room if you wanted.

ROBITRONICS
PRO2000 PEAK
CHARGER

According to Robitronics*, its newest charger can safely charge any rechargeable pack. With features such as thermal peak, timed peak, adjustable threshold and a multifunction display, it looks like a good top-of-the-line charger.

he had his eye on the car that had just taken him out. Working the rear of Kitazawa's car, Spashett had his work cut out for him. Spashett tapped a few dots, dropped back slightly and eased the pressure for a second. Within two laps, Spashett was again trying to get by Kitazawa. In a bold move Spashett tried an unheard-of pass around the outside of Kitazawa. Again, Spashett was sent parading into the boards. Masami continued his romp through the field. Kitazawa hit a dot, spun in the straight and almost connected with Spashett for a third time. Spashett made a valiant charge to second and finished behind Masami who took the second A-Main with 32/8:04.21.

• A3. The tension was immense because of the on- and off-track antics shrouding the final A-Main. Would David Spashett



Atsushi Hara's ISTC-winning Yokomo MR4-TC Pro. Hara used a Reedy 8-double coupled with Yokomo Sanyo 3000s and a GM V12W ESC.



Three separate typhoons threatened the island during the nine-day event, and at times it rained so hard that it actually rained inside the building. Masami and his father engineered a way to keep everything dry.

dethrone Masami in his own house, or, would other factors decide the race? At the start tone, Masami and Spashett led the pack through the first two corners. Some heavy bumping in the first lap spread out the pack. Masami, Spashett and Cyrul had the top three positions. With about seven minutes to go, Spashett hit a dot and put Cyrul in second. Yoshioka made an impressive charge early in the race and moved up into second. Spashett hit teammate Josh Cyrul at the end of the straight and lengthened the distance between Masami and the Trinity teammates. As time wound down, Yoshioka caught Masami in the last turn and crossed the line 0.12 second behind Masami, who won the event with 32/8:03.15. Yoshioka took second, and David Spashett had the third position. With his second victory, Masami Hirotsuka took the 2000 1/12-scale World Championship.

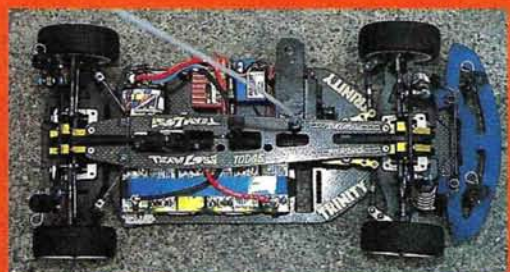
ISTC

• Qualifying. The home-track advantage enjoyed by some drivers didn't seem to be as apparent for the touring cars. In fact, the

NEW IN THE PITS

LOSI PROTOTYPE SEDAN

Losi* was racing a prototype version of its next-generation sedan. With a completely new suspension geometry, the car seemed to hook up very well. It's made from woven graphite and machined aluminum, and Losi was quick to point out that it's purely a prototype. The production sedan will look different but may retain the car's overall layout. The single-belt drive train was ultraquiet and efficient. It was hard to say if the drive train made any noise on the track. Jukka Steerni just missed the A-Main because of a three-way tie for the 10th position—not a bad showing for a prototype car with limited track time. The production sedan should be awesome.



Note the machined bulkheads, arms and mounts. The gold anodizing is a welcome break from blue and purple, but whether these parts will appear in production or not is unknown. Most of the graphite plate pieces will likely be replaced with molded parts.

Yokomo cars seemed to have a disadvantage, compared with the Associated TC3. With sharp turns and short chutes, the TC3 accelerated much harder out of the corners; TC3 drivers credited this to its shaft design. Billy Easton's and Mark Pavidis' TC3s were immediately hooked up. The first official ISTC World Championship looked as though it could be anybody's title. Easton set the event's fastest TQ pace but had trouble finishing in the top spot in the remaining heats. Masami was fast, and he earned the top position with three TQ runs. Pavidis, who clearly had the track's fastest car, secured the second spot. With a couple of bad runs and tangles with slower traffic, he missed the TQ posi-



The Chicken Man was one of trackside's dining attractions. Most of the food was on a stick and unidentifiable. The "Chicken Balls" became a favorite snack of the racers, and although they were round and tasted like chicken, most were unsure of what they were made of.

tion. The top 10 drivers locked into position, and the crowds gathered to watch the event's most anticipated class.

• **A-Main 1.** Even I was a little nervous for the start of the first Main, so I could only imagine the butterflies the 10 drivers must

have had. The horn sounded, and roughly 80 turns of copper roared down the end of the straight. Hara sent Pavidis into the boards and was later given a warning for rough driving. Masami took control of the race while Yoshioka worked second, and Hara fell into third. Hara made a pass to take second while Craig Drescher quietly went from the ninth spot to the third within the first 45 seconds of the race. Masami set his car on cruise control, and Hara and Drescher followed. Pavidis worked his way up to the fourth spot after his horrible start. Masami took the first Main with 20/5:15.35 and was followed by Hara. At the race's finish, Pavidis and Drescher raced to the line for third; Drescher hit a dot, launched 3 feet in the air, actually jumped the coil and wasn't counted. After an official review, Drescher was given the third position.

• **A2.** The second Main was anticipated just as much as the first. At the start, Masami again took the lead through the first turn and was followed closely by Pavidis and Hara. Pavidis' car was definitely on rails for this Main because he was all over the back of the defensively driving Masami. Hara watched them battle, patiently waiting for the two to tangle or to leave the door open. The crowd "oohed" and "ahhed" at Pavidis' every attempt to pass. At last, coming up to the short chute before the straight, Pavidis made the pass to take first. In nearly the same spot as Pavidis had made the pass in the previous lap, Masami rolled up on Pavidis and took him out; the crowd booed their disapproval. Another lap and Masami was penalized with a stop-and-go for his aggressive driving. Hara's patience paid off, since the tangle allowed him to take command of the race. Easton moved up to challenge Hara for the lead while Masami



Mike Reedy now has 22 world championship wins credited to his motors ...



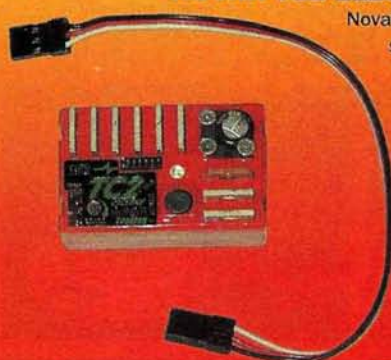
... power broker **Jim Dieter** kept the Trinity guys hooked up with plenty of horses ...



... while **Orion** probably had the best-stocked, neatest motor pit. Hey, got an armature I can borrow?

NOVAK TC2 ELECTRONIC SPEED CONTROL

Novak* was running its latest Cyclone, which should be available later this spring. The TC2 has innovative features like a plug-in input lead and an integrated on/off switch. Novak tested different profiles from the current Cyclone TC.



TRINITY D5 MODIFIED MOTOR

Trinity* tested its new D5 motor with flat-can technology, as pioneered in the Midnight 2, Paradox and P2K stock motors. The D5's new brush design is supposed to reduce comm wear on lower turn motors and to increase efficiency.



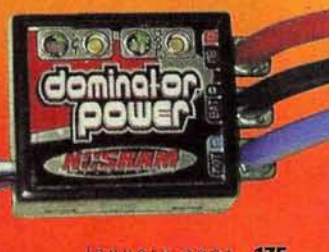
ROBITRONICS STOPWATCH/LAP TIMER

Robitronics also offers this stopwatch with 200-lap memory, fastest lap, slowest lap and average lap-time displays. It's a very handy tool for checking your speed in practice and for keeping tabs on the competition. Look for the stopwatch and Pro 2000 charger to be distributed by Trinity.



NOSRAM DOMINATOR POWER ELECTRONIC SPEED CONTROL

Takuya Ito and Chris Tosolini both ran Nosram ESCs in their A-Main Pro-10 and 1/12 cars. The tiny speedo can handle any motor, and its small size makes it perfect for those cars with limited electronics space.



served his time in the penalty box. After a quick regroup, Pavidis was back in contention, battling for second with Andy Moore. Pavidis took the inside line around a corner and removed Moore from the picture. He had his TC3 locked on Hara, and around the final corner leading to the straight, Hara and Pavidis pulled full throttle. Hara's car slowed down in the straight, and showing the power and efficiency of the Reedy-powered TC3, Pavidis won the second Main in dramatic fashion with a pass down the straightaway. Pavidis won with 19/5:01.83 and was followed by Hara and Drescher.

• A3. It was now a three-way battle for the title: both Pavidis and Masami had a victory and prime positions, but Hara was actually ahead with two second-place finishes. The arena was now packed with spectators who wanted to witness the race. At the tone, it was a clean 1-2-3 start with Masami leading the way again. Masami and Pavidis were again separated by a sticker's thickness, and Hara waited a few feet back to make his move when either driver made a mistake. Pavidis tried everything, including passing on Masami's outside. Pavidis pushed a little too hard and allowed Hara to speed by with less than 2 minutes to go.

WHAT IT TAKES TO BE SPONSORED

Fifteen-year-old Tayuka Ito received some big league attention when he made it to the top 10 of both the Pro-10 and 1/12-scale classes. Ito is a very promising driver with a good attitude, and it wasn't long before the sponsors were hovering around the pits. During the Pro-10 class, Ito signed with Team Trinity. I went to the source of Ito's new-found sponsorship and asked Ernie Provetti, Trinity's CEO, for the inside story about sponsorship.

RCCA: How surprised were you to see a non-sponsored driver in the top 10 running both Pro-10 and 1/12-scale Trinity cars?

Ernie: I was not only shocked but also somewhat pleased. From time to time, it's nice to see a real talent like Ito beat some of the world's best drivers with his own

setups and all his own ideas. The only thing that prevented him from doing even better was experience. He is a real talent for the future!

RCCA: When you go to a race, do you always look for fast drivers who maybe need some assistance to be even faster?

Ernie: If someone has talent, you can always spot it. In most cases, I look for customers using my products. If it looks as if someone might have a shot at the A, we will try and help him as soon as possible. Racing is not like it was years ago; today, everyone is competitive, and anyone can win on any given day.

RCCA: Once sponsored, do team drivers perform other functions, such as sweeping the floor?

Ernie [laughing]: Depends on the contract; they have to clean my car once a week.

RCCA: Readers are always begging to be sponsored. Is it realistic for them to think they could be? What are you looking for when you offer a Trinity sponsorship?

Ernie: My pat line is, "If you have to ask to be sponsored, you are not ready." When I see someone with the talent and a great attitude, I'll approach him. Matt Francis is a good example of a person who would be an ideal "make-up," personality-wise and talent-wise.



Associated TC3: Worlds' fastest touring car

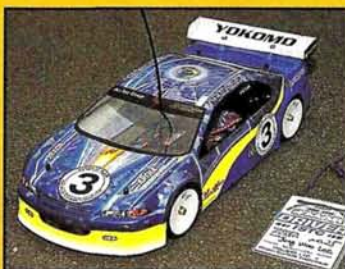
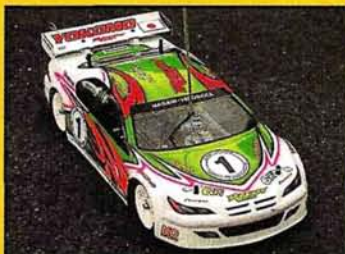
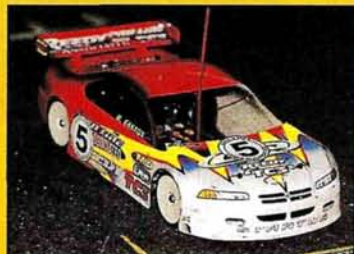


Yokomo dominated the Worlds and took the ISTC win, but Mark Pavidis' Associated TC3 put down the fastest individual laps of any car in the ISTC class. It was a great event for Associated even without the victory; four of the 10 A-Main spots were filled by TC3s, and all the racers agreed that Associated's shaft machine had the hookup. Team drivers credited much of the car's performance to the shaft drive, which they felt gave them an edge in acceleration. Congratulations to all the Team Associated drivers on their impressive performance.

COOL PAINT JOBS OF THE WORLDS

Not only was there some impressive driving, but there were also some really interesting paint schemes that deserve some attention. The pictures speak for themselves.

The Dodge Stratus was the body of choice for all 10 ISTC A-Main drivers, but no one settled on a particular brand; bodies from Protoform, HPI, and Andy's all performed well.



Masami bicycled around a hard left and allowed both Hara and Pavidis to pass. Pavidis closed on Hara, and with 30 seconds to go on the clock, the two were battling again. Pavidis hit a dot and allowed Masami to pass. With 5 seconds remaining, the top three drivers had one more lap to decide the winner: Hara led the way, and Masami was right behind. As they entered the straight, the two Yokomo cars once again slowed. Pavidis passed Masami and closed on Hara. With a last squeeze of desperation, Pavidis tried to cut the corner to squeak by him but couldn't cross the line before Hara took the

win with 20/5:15.67. Pavidis earned second with 20/5:16.37. With the victory Atsushi Hara became the first official ISTC World Champion.

FINISH LINE

An international event of this size yields some of the sport's finest racing. The 2000 IFMAR Pro-10, 1/12 and ISTC Circuit World Championship was one of



Masami made a touching speech about Mike Reedy and his father, who had supported him since the beginning of his long RC career. He presented them both with flowers, thanking them for their support. Although still unofficial, rumors were that it was Masami's retirement speech.

the greatest events in RC racing history. It was packed with close races, and its behind-the-scenes drama made it all the more fascinating. The ISTC class proved once again why it is one of the most popular classes in the world. The staff of RC Car Action congratulate the winners, sponsors and participants.



The A-Main ISTC winners complete with posable Yokomo action figures.



The 1/12-scale winners (without Spashett or Cyril who staged a quiet protest against the questionable driving during the Mains).

WINNERS

PRO-10

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Tires	Pinion/spur	Body
1	1	Masami Hirasaka	Yokomo	Reedy 8x3	Yokomo (Sanyo)	GM	KO Propo	TRC/Jaco	19/120	Protoform
2	2	Daisuke Yoshioka	HPI	Orion 9x3	Orion (Sanyo)	LRP	Sanwa	HPI/Jaco	18/122	Protoform
3	3	Hideo Kitazawa	Yokomo	Reedy 8x3	Yokomo (Sanyo)	GM	Futaba	TRC/Jaco	19/120	Protoform
4	4	Barry Baker	Yokomo	Trinity D5 8x5	Trinity (Panasonic)	Novak	Airtronics	TRC/Jaco	20/116	Protoform
5	5	Atsushi Hara	Yokomo	Reedy 8x3	Yokomo (Sanyo)	GM	EX-1	Jaco	19/115	Protoform
6	7	Chris Tosolini	Yokomo	Reedy 8x2	SMC (Sanyo)	Nosram	Airtronics	Jaco	19/120	Protoform
7	9	Mike Blackstock	Trinity	Trinity D4 8x4	Trinity (Sanyo)	Novak	Jr	TRC	22/120	Protoform
8	10	Masayuki Murai	HPI	Orion 8x3	Orion (Sanyo)	LRP	KO Propo	HPI/Jaco	18/122	Protoform
9	8	Jon Orr	Trinity10	Trinity D5 8x4	Trinity (Panasonic)	GM	KO Propo	TRC	21/120	Andy's
10	6	Takuya Ito	Trinity	Trinity D4 8x5	Trinity (Sanyo)	Nosram	Sanwa	TRC	23/120	Protoform

1/12 SCALE

1	1	Masami Hirasaka	Associated	Reedy 10x2	Yokomo (Sanyo)	GM	KO Propo	Trc/Jaco	23/98	Andy's
2	2	David Spashett	Trinity	Trinity D4 10x4	Trinity (Sanyo)	LRP	KO Propo	TRC	24/100	Andy's
3	7	Daisuke Yoshioka	HPI	Orion 11x2	Orion (Sanyo)	LRP	Sanwa	Jaco	25/94	Andy's
4	4	Hideo Kitazawa	Associated	Reedy 9x3	Yokomo (Sanyo)	GM	Futaba	TRC/Jaco	23/100	Andy's
5	10	Masayuki Murai	HPI	Orion 11x2	Orion (Sanyo)	LRP	KO Propo	Jaco	26/100	Andy's
6	6	Josh Cyril	Trinity	Trinity D4 10x5	Trinity (Sanyo)	Novak	KO Propo	TRC	25/98	Protoform
7	3	Andy Moore	Trinity	Trinity D4 10x4	Trinity (Sanyo)	LRP	KO Propo	TRC	—	Andy's
8	8	Markus Mober	Corally	Corally 9x2	Corally (Sanyo)	LRP	Sanwa	Corally	—	Bud's
9	5	Takuya Ito	Trinity	Trinity D4 10x2	Trinity (Sanyo)	Nosram	Sanwa	TRC	22/95	Andy's
10	9	Yutaka Takizawa	Kawada	Kawada MX5 10x5	Echo (Sanyo)	M-Tronics	Sanwa	Kawada/Jaco	25/100	Andy's

ISTC

1	3	Atsushi Hara	Yokomo MR4 TC	Reedy MW 8x2	Yokomo (Sanyo)	GM	KO Propo	Handout	21/78	Yokomo
2	2	Mark Pavidis	Associated TC3	Reedy MW 8x2	Reedy (Sanyo)	LRP	Airtronics	Handout	30/100	Protoform
3	1	Masami Hirasaka	Yokomo MR4 TC	Reedy MW 8x2	Yokomo (Sanyo)	GM	KO Propo	Handout	20/78	Yokomo
4	9	Craig Drescher	Associated TC3	Reedy MW 8x3	Reedy (Sanyo)	LRP	KO Propo	Handout	30/100	Protoform
5	4	Daisuke Yoshioka	HPI RS4 Pro 2	Orion 8x2	Orion (Sanyo)	LRP	Sanwa	Handout	29/122	HPI
6	5	Billy Easton	Associated TC3	Reedy MW 8x3	Reedy (Sanyo)	LRP	Airtronics	Handout	31/104	Protoform
7	6	Hideo Kitazawa	Yokomo MR4 TC	Reedy MW 8x2	Yokomo (Sanyo)	GM	Futaba	Handout	21/78	Yokomo
8	7	Shinnosuke Adachi	Yokomo MR4 TC	Reedy MW 8x2	Reedy (Sanyo)	GM	Sanwa	Handout	21/78	Yokomo
9	8	Andrew Moore	Yokomo MR4 TC	Trinity D4 8x2	Trinity (Sanyo)	LRP	KO Propo	Handout	22/78	Yokomo
10	10	Mike Blackstock	Associated TC3	Trinity D4 8x3	Trinity (Sanyo)	Novak	JR Propo	Handout	30/100	Protoform

*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■

Rebuild a Stick Pack

Re-pack your pack by Matthew Higgins

The pack on the right looks gnarly, but it can be restored. The pack on the left is toast; judging by the bubbled "shotgun-tube" split shrink-wrap and missing end-cap, it has been over-charged, overheated and just plain abused. Take it to the hobby store to be recycled. If they don't collect old Ni-Cds, go to RadioShack.

YOU'LL NEED

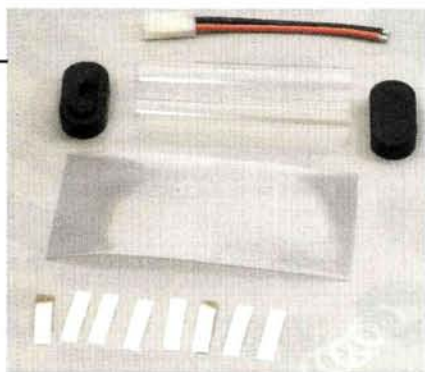
- Soldering iron.
- 60/40 rosin-core solder.
- Third hand.
- Wire stripper.
- Hair dryer.
- Trinity* stick-pack building kit (part no. RC5102).
- Connector and wire, or prewired "pigtail."

Remember when your favorite stick pack was new? The shrink-wrap was crystal clear, the pack was straight and tight and the connector clipped on with a kung fu grip. That trusted stick pack has served you well, but now its wires are frayed, the plug is worn out and what's left of the shrink-wrap barely holds the cells together (yet it's still doing a good job of trapping dirt inside). It's time to do a little maintenance and make that pack as good as new—or even better.

1 Discharge the pack!

It doesn't matter how you get the juice out of the cells; just get it out. A bulb-type discharger works best; you can make your own by following the instructions in the February 2000 *RC Car Action* article, "How to Build a Battery Dumper." Here, a Deans* discharger pulls down the pack. If you don't have (or don't plan to get) a discharger, simply run your car until the pack flattens out. Even though you will be working with a dumped pack, treat it as though it were fully charged, and avoid shorting the cells.

Trinity's stick-pack building kit has all the parts you need to bring your battery back to life. The plastic insulation rings and battery bars are used for building a stick pack from single cells; you shouldn't need them for a rebuild.



After discharging a pack, cut off the shrink wrap.



Wow! Those cells look like new. This pack was rescued before the torn-up heat-shrink let too much dirt into it.



Use a toothbrush to clean out any dirt and grit that's between the cells as you check for corrosion and damage.

2 Remove the shrink-wrap.

Use a pair of body scissors to cut down the valley between the two rows of cells and peel off the shrink-wrap. Remove the bottom cap, and lift the top cap off the cells (you won't be able to remove the cap entirely because it's trapped by the connector). Shake out as much dirt as you can from the "shotgun tube," then slide the tube off the cells and brush out any remaining dirt and dust. If the tube won't slide off easily, just cut it off; the Trinity rebuild kit includes a new shotgun tube.

3 Inspect the cells, wires and connector.

If any of the cells are dented or corroded, just junk the pack; do the responsible thing and take it to RadioShack for recycling. If the cells are OK, move on to the wires and connector. Look for worn-through insulation and frayed wires, and check the connector for bent or worn contact pins; if you have either, replace the parts as covered in the next steps. If everything looks good, and you plan to reuse the existing connector, skip to step 6.

If your pack's wires drag on the ground when installed in your car, you'll get damage like this. These wires should be replaced.



4 Remove the wires and connector.

Remove the old wires and connector (or "pigtail") by unsoldering the leads where they join the top two cells. Allow your soldering iron plenty of time to heat up, and then hold the tip to the joint between each wire and the corresponding cell. If the solder doesn't liquefy and release the wire after 10 seconds or so, try melting a little solder onto the tip of the iron. The molten solder will flow into the joint and spread the heat. Don't let the pack hang from the wires as you do this, or the solder will splatter when the wire is released from the pack. Eye protection is always a good idea (and you know you look good in shop glasses).

Be careful not to splatter solder when you remove the old wires. Don't let the pack dangle from the wires as you work; always place it on a stable surface.



5 Install new wires and connector.

First, decide which type of connector to install. DuraTrax* and Acer Racing* offer the popular "red and black" Powerpole connectors. Tamiya and Deans plugs are also available for do-it-yourself assembly, or you can buy them as assembled pigtailed; see the sidebar "Choosing a connector" for help on deciding which way to go. Strip about 5mm of insulation from the ends of each of the pigtail's wires, and tin each end. Don't overdo it with the solder; if you saturate the wire, it won't be flexible. After both wires have been tinned, feed them through the new top cap included with the Trinity rebuild kit, then solder the wires to the cells. Lay the wires on top of the cells, as shown in the photo, so they will fit beneath the end cap, and pay attention to polarity (red is positive, black is negative).

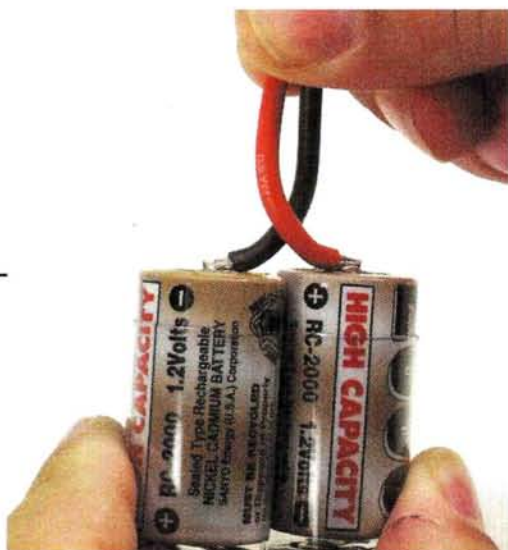


Don't forget to slide the top cap onto the "pigtail" before you install it!



Solder the wires to the cells as shown. The positive wire should cross the negative cell and vice versa.

When you've finished, the wires should look like this. This positioning helps the wires "nest" under the top cap.



Reassembly.

6 Now all you have to do is slide the cells into the new shotgun tube, pop on the new bottom cap, and shrink everything together. Position the heat-shrink sleeve so that it overhangs each end cap equally, then blast it with the hair dryer on "high." Some guys use a heat gun, but that's more heat than you really need.

A hair dryer works just fine, and unless you live with Sinead O'Connor or Mr. Clean, there's already one in the house. Rotate the pack as you cook it with the hair dryer for a nice, even shrink.



Now all you have to do is slide on the heat shrink and blast it with a hair dryer. If you like, you can put a decal or a label under the heat shrink to identify the pack.



And there you have it! It's like getting a new pack. Now charge it up and hit the track!

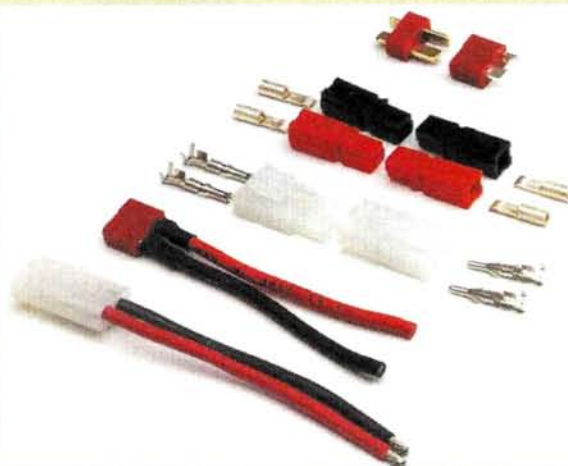
That's a job well done and one that was probably long overdue. Now that you've brought new life back to that old stick pack, charge it up and take your favorite ride out for a blast!

Choosing a connector

The JST ("Tamiya-style") connectors included with most stick packs are the industry standard and work just fine for most hobbyists. If you're happy with the performance you've been getting from this type of connector, stick with it. That way, you won't have to change the connectors on your charger and speed control, and any new packs you buy will be ready to interface with your gear. On the other hand, if you've installed a hotter motor and the connectors are getting hot (or worse, melting) due to their electrical resistance and the increased amp draw, consider moving up to "zero loss" connectors. This type of connector has equal electrical resistance to the wire it replaces, if not less. There are several brands, but these two are the most popular.

Deans Ultra Plugs

Deans plugs are known for their high performance and small size. They are available in pairs (one male, one female—part no. 1300), or as assembled, ready-to-install pigtailed (2010). The female end always goes on the pack; if you put the male connector on the pack, its exposed prongs are likely to short out on a tool shaft, metal surface, or other metal object. Deans connectors are easy to install, even with heavy-gauge wire.



From top to bottom: Deans plugs, Sermos Powerpoles, JST "Tamiya" connector, assembled Deans pigtail and assembled Tamiya pigtail.

Powerpole

These are sold by DuraTrax and Acer Racing and are simply called "red and black" connectors. Powerpoles are great for custom projects because each "half" can be left independent or joined in a variety of configurations. In addition, the connectors are unisex: there is no "male" or "female" connector. The only downside is the somewhat tedious assembly they require. For tips on installing Powerpole and Deans connectors, see "How To Perform Essential Soldering Tasks" in the December 1998 issue of *Radio Control Car Action*.

Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■

Simplify the System

Simple is better. Personally, I accept that statement as an axiom for happiness in life and happiness in the RC car world. This is particularly true of fuel systems. A clean, simple fuel system plumbed with high-quality fuel tubing is going to be a bubble-free, better functioning system more of the time—making you a very happy racer.

Here I am, taking out those well-intended but potentially trouble-causing primer pumps found on some tanks. The point at which the pump shaft exits the tank is the problem spot. When the car is new, the O-ring that seals the pump shaft as it goes into the tank usually performs its job well. The moment some track dirt gets on the exposed shaft—and it will—all bets are off. Remember, this is the area that's repeatedly pushed down into the tank for priming purposes, and sooner or

later, most likely sooner, if you race off-road, that track dirt is going to be pushed down into and past that O-ring seal. Of course, dirt in the tank is not good, but the problem usually starts before that even happens. The O-ring seal becomes scratched and compromised by the dirt. The tank starts to intermittently leak air around the damaged O-ring, which in turn starts intermittently screwing up your main needle-valve setting and driving you totally crazy.

True: engines actually suck the fuel mixture into the carb by virtue of negative crankcase pressure. We've been over that before. Muffler pressure, however, sets up a slight positive pressure in the fuel tank and makes it easier for the engine to do its sucking thing. If this positive tank pressure is fluctuating because of a

lousy O-ring seal—a very common occurrence—then there is no way that your engine's carburetor can hold a constant main needle-valve setting; and do this it must.

Solution? Get rid of the O-ring and the entire annoying pumping mechanism; you don't need it anyway. There are other easy ways to prime a carburetor. When the engine is cold and it most often needs to be primed, you can

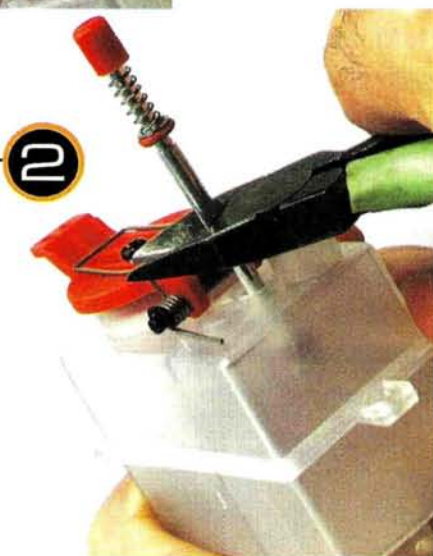
There are several types of primer pumps, but they can all be removed in the same basic way. On the left is a Kyosho* tank, and on the right, a CEN* tank. I'm not singling these out as bad; I think all primer pumps stink. I'm just using them to demonstrate removal.

simply hold your finger over the exhaust outlet and turn over the engine. This pumps positive pressure into the tank and pushes fuel up to the carb. Or, you can use a primer bottle to drip fuel directly into the carburetor venturi.

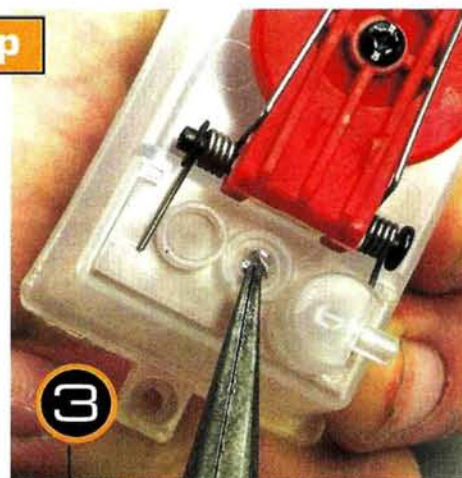
Here's how to remove that problematic pump



I'll start with the Kyosho. This one has a very small step that prevents it from popping out of the tank. You can easily work this step past the hole and out of the tank with a little prying action. This won't damage the pliable polypropylene tank material.



Lift the pump shaft as far out of the tank as it will go and cut it as close as possible with a pair of Dyke's rings.



Push the remaining lower part of the pump shaft back into the hole until it falls inside the tank.



Shake the tank until the lower part of the shaft spills out of the tank. (At this point, you may use a large hammer to get even for all the aggravation the thing has caused you!)

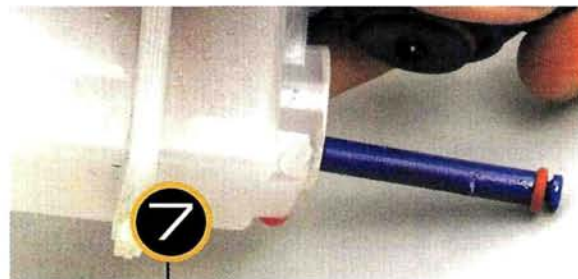


5

With the CEN-type pumper tank, the plastic shaft's step is far too large to be pulled past the shaft hole. In this case, you just snip the shaft's top off as close to the tank's top as possible.

The CEN tank's pumper shaft is soft plastic and can be pushed toward the tank's opening until it pops out of the lower plunger cavity and falls forward.

6



7

Evict that annoying sucker from its domicile! You're the landlord of this tank!



8

Save the O-rings, and force them into some truly useful service. Find a sheet-metal screw that's large enough to tightly screw into the disused pumper-shaft hole; use the O-ring as a washer, and screw it in. If you really want to be thorough, use a bit of silicone seal in the process. That's all there is. It's simple—and simple is better—ALWAYS!

Q "Piston Power" rules!! Could you please tell me what the temperature range should be for a Traxxas PRO-15? I use Traxxas top fuel 20 percent.

Dan

A Dan, I'm glad you asked. Temperature sensing devices are great tools for helping us tune our engines. Unfortunately, too many of you guys have been led to believe that these things can do the job for you; they can't. They are not (NOT!) the magic wand we've

been looking for to perfectly tune our engines every time. These devices can give us relative information, but we have to take into account many variables when we measure running temperatures.

The biggest variable is weather. A specific engine may produce more power when running at 225 degrees F on a day when the temperature is 55 degrees with 40 percent humidity than it will on a day when it's 90 degrees outside with 90 percent humidity; then, it runs at 275 degrees. Glow engines just perform much better in cool, dry conditions.

The MIP temperature gauge has a wire that wraps around the outside of the cylinder head. It does have a Fahrenheit scale option button.

Understandably, racers often ruin their engines when they try to get the same results on a hot, humid day as they previously got on a cool, dry day. It just ain't going to happen without toasting the engine—period.

Another big variable involves how and where you take temperature readings. If you have an infrared heat gun and aim it at the glow plug, you're going to get a different reading than you'll get with a hard-wired sensor unit, such as the one that MIP* offers. Because of how and

where you take the reading, the hard-wired unit might read 20 to 50 degrees lower than the infrared one aimed at the glow plug. Both readings are totally valid, but they are purely relative within each method and not to each other.

Every track has some know-it-all who boasts loudly and struts around as though he's on a first-name basis with Dale Earnhardt Jr.: "Take it from me, you should be getting blah-blah-blah degrees for best results." Under what weather conditions? Using what measuring device? Measuring on which part of the engine? Using what fuel? Even different engines run at slightly varying temperatures.

Traxxas engines, in my opinion, tend to run slightly hotter than some others. On a day when it was 75 degrees outside with 50 percent humidity, using an infrared gun and measuring at the glow-plug tip, we got a reading of about 280 to 285 degrees on our Pro .15 engines. Traxxas says you can go to 310 degrees, but I don't like to.

We'll be running an in-depth article on the use and relative application of heat measuring devices. Watch for it. I think the venerable Steve Pond will be writing it. You know—I taught the guy everything he knows—HAH!

*Addresses are listed alphabetically in "Featured Manufacturers" on page 256. ■



BY KEVIN
HETMANSKI

Basic interior detailing

Which company produces the most detailed truck interiors in the RC industry? That's an easy one: Tamiya*. The Wild Willie, Bruiser/Mountaineer and Tamiya's 18-wheeler line all feature intricate, injection-molded interiors. It doesn't take much effort to simply paint them, but with just a little extra effort, you can make an interior that looks ready for you to slide into, adjust the tilt wheel and take a drive. Here's how to do it.

• **Do your research.** If you want your scale truck's interior to be as realistic as it can be, you'll have to do some research on the full-size version. Check the Internet, magazines and truck dealerships; you're bound to find something that will point you in the right direction. There are no rules when it comes to detailing; you can go as wild or be as mild as you like. Even if you don't feel up to duplicating the truck's interior to the last detail, a look at the full-size version of your model is sure to inspire you.

• **Parts prep.** First, remove the parts from the parts tree and check them for imperfections such as mold lines, injection-pin marks and



I made this interior for a custom-built Chevy Crew Cab (see the April '98 issue of *RC Car Action*); compared with what I could have done if I had had more time, it's actually somewhat mild.

sunken areas. Sand down the high spots, and use body filler on the low spots (for more info on plastic-parts prep and painting see the May and June 2000 issues' "4x4"—"How to prepare and paint ABS plastic bodies"). When you're satisfied with the parts' shapes, roughen their surfaces with a small piece of a Scotch-Brite pad to give the primer a good surface to stick to.

Clean the parts with soap and water to remove any mold-release agent, skin oil and dust. Dry them with a lint-free towel, and then let them sit to allow all the moisture to evaporate from the nooks and crannies.

• **Painting.** When the parts are completely dry, give them a couple of coats of primer; I like to use Duplicolor Scratch Filler primer. While that's drying, decide which color you want for your interior. Don't worry if the color you like best is available only in gloss; a coat or two of Testor's* Dullcote will give the parts a nice matte finish that simulates the plastic and vinyl of a real interior.

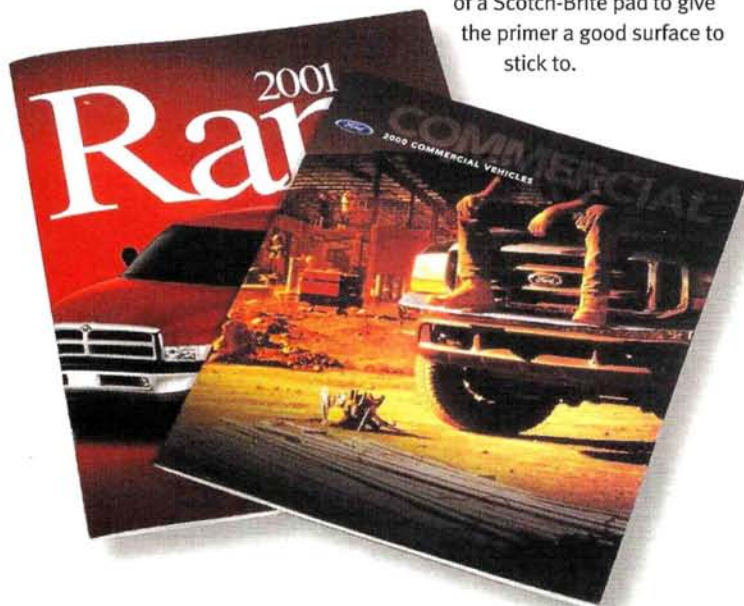
Allow at least a day for the primer to dry, then spray on your chosen color. To help the paint flow, first warm the spray can by placing it in warm water for a few minutes. Spray just enough paint to cover the part evenly.

• **Carpet.** If your interior has a floor, you can make it look more realistic by adding carpet. Model

Master* makes scale carpet in many colors, but if you can't find the color or texture you want, head to the local fabric store. As an RC guy, I know that is the last place you want to go but, trust me, it is worth the trip. You'll find all kinds of fabric that can be used to simulate carpet.

Installing the carpet is a little tricky, so take your time when doing it. First apply strips of masking tape to the underside of the "carpet"; you'll be able to sketch on it. Measure the floor and sketch its shape on the tape. Remember to work in reverse, since you're working on the material's "wrong" side, and you'll flip it over when you install it.

Cut the "carpet" slightly large all around; I usually cut it about an 1/8 inch away from the lines I've drawn. Lay the carpet in the truck and then trim it to fit. When you're satisfied with its look, glue it down with rubber cement. Leave the masking tape on the underside; it will help the carpet to keep its shape when you stick it down. Give the cement a chance to get



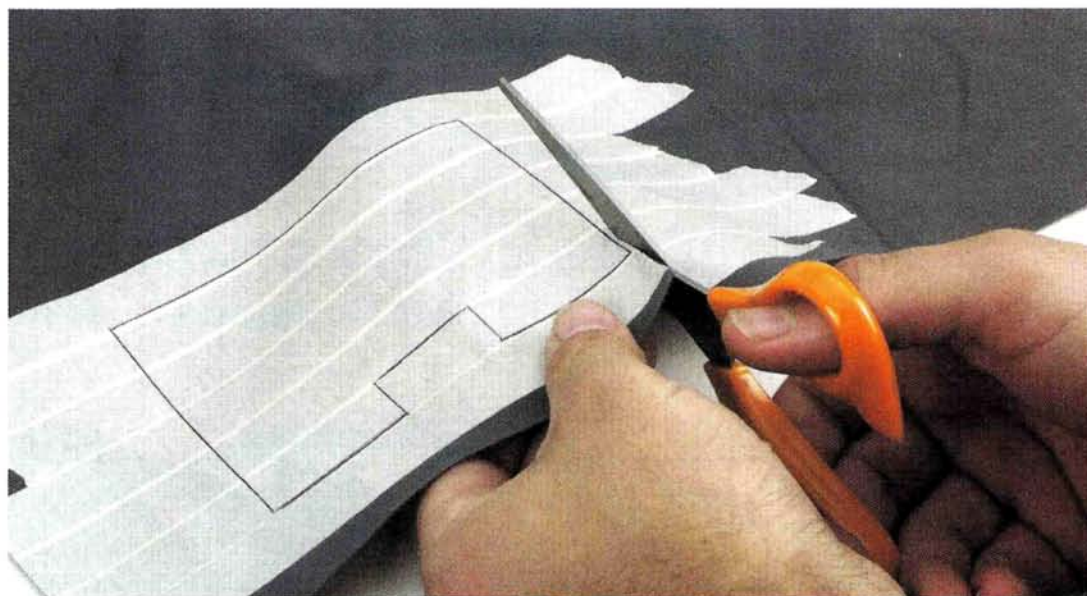
The information you need to detail your truck is readily available; I picked up these brochures from local truck dealers.



Left: this is a seat from the Tamiya Volvo Globetrotter truck; after a few coats of gray primer as a base color, I covered it with gray flocking. **Middle:** cover the seat with glue, then sprinkle on the flocking and press it into place. **Right:** when the glue has dried, dust off the loose flocking with a small brush, and your seat is finished.

tacky, then position the carpet and smooth it lightly to flatten it. Let the rubber cement dry, and you've finished.

• **Floor mats.** I don't know about you, but every truck I've ever been in has floor mats. To make mats for your truck, buy a rubber jar opener (it's just a round piece of thin textured rubber; you might even be able to boost one from Mom) in a color that's close to your interior. Make a few paper test-mat templates to settle on the correct shape and size, then trace the shape you want onto the jar opener and cut out one "floor mat" Flip your template over to cut out the



I made this a floor mat by cutting a thin rubber jar opener to size and then gluing on "carpet" to dress it up.



When you cut out the "carpet" pieces, cut just outside the lines you drew, then trim them to size later. The tape will help you fix the carpets' shapes, cut them out and lay them into place.

other mat (remember, you need a left one and a right one). Now cut identical shapes out of your left-over carpet, and glue them to the rubber mats. That's about as scale as you can get!

• **Fabric fakery.** As already noted, Testor's Dullcote will help to take the shine off glossy colors and will produce a realistic "vinyl" look, but for super realism, "flocking" is the way to go. This stuff simulates fabric, and it's easy to apply.

Detail Masters'* velour flocking is the best. Start by coating the seat with a glue such as Elmer's that dries clear. Hold the seat over a piece of paper to catch the

excess flocking, dump the flocking over the seat, and press it into the wet glue. Shake the seat lightly to get rid of the excess flocking, and set it aside to dry. When the glue has dried, dust off the loose flocking with a small brush.

These are just a few tips that will make your truck's interior come to life. With this kind of project, you can get really crazy and add even more detail. The possibilities are endless; you can detail the door panels with arm rests, cut the seats and make them fold forward, add storage compartments—whatever you want to do. Just have fun!

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Hobby Raceway, 15717 Beacon Point Dr., Tuscaloosa, AL 35406; Don, (205) 333-8679

Hobbytown USA Raceway, 450-Q Schillinger Rd. N., Mobile, AL 36608; Rob & Kari Baker, (334) 633-8446

Lagoon Park R/C Raceway, 2730 Lagoon Park Dr., Montgomery, AL 36109; Alex Love, (334) 272-6438

Montgomery's Field of Dreams, 5924 Ralston Way, Montgomery, AL 36116; Mike Westendorf, (334) 281-9432; mike_westendorf@yahoo.com

Phenix Raceway & Hobby, 2006 Opelika Rd., Phenix City, AL 36867; Chris Watson, (334) 298-9786; http://www.xoom.com/PhenixHobby

R/C Hi-Tech Raceway, 3303 Meridian St., Huntsville, AL 35811; Rick Chambers, (205) 539-1347

R/C Thunder Tracks, 1530 Schillinger Rd., Mobile, AL 36675; for mail, use 8125-2 Moffett Rd., Semmes, AL 36575; Jerry Hurst, (334) 645-2787

ALASKA

Fairbanks R/C Car Club, 510 Juneau Ave., Fairbanks, AK 99701; Dan Anderson, (907) 456-5494

ARIZONA

Craft Barn Raceway, 11200 E. Hwy. 95, Yuma, AZ 85365; Matt Poston, (520) 726-1946

Hobbytown Raceway, 1102 E. 22nd St., Tucson, AZ 85704; (520) 882-8888

HobbyTown U.S.A., 5030 E. Ray Rd., Phoenix, AZ 85044; Linda McFarland, (480) 598-5282

Kiwanis Park R/C Raceway, 855 S. Magnolia Ave., Yuma, AZ 85364; Jim Schulz, (520) 783-5378

R/C Sports Mania, 3550 N. 35th Ave., Phoenix, AZ 85017; Brian Dick, (602) 278-3671

Scottsdale R/C Raceway, 3023 N. Scottsdale, Scottsdale, AZ 85251; Scott Anfinson, (602) 945-2186

Speedway Hobbies, 2710 N. Steve's Blvd., Ste. 8, Flagstaff, AZ 86004; Gary McAllister, (520) 714-1566

ARKANSAS

Airport Speedway, 1521 Airport Loop, Rogers, AR 72756; Mike Dollar, (501) 636-7123

Grand Slam Superspeedway, 5300 S. Zero St., Ft. Smith, AR 72901; Bryon Shumate, (501) 648-1994

Hobby Town USA, 356 E. Joyce, Fayetteville, AR 72703; Darrell Irvin, (501) 571-3730

Sparks R.C. Raceway, 7194 Greene 721 Rd., Paragould, AR 72450; Tommy Sparks, (501) 239-3606

CALIFORNIA

Asphalt Burners R/C Club, 21000 Imperial Hwy. and Harbor Blvd., La Habra, CA 90631; (562) 691-1409; www.asphaltburners.homepage.com; m-racer@gmail.com

California R/C Raceway, 1230 N. Kramar, Anaheim, CA 92806; Taka, Sid, or Charlie, (714) 630-9300

Capital City R/C Center, 8950 Osage Ave., Suite A, Sacramento, CA 95829; Omar Sabout, (916) 383-3445

Castle Hobbies, 14918 Camden Ave., San Jose, CA 95124; (408) 377-3771

Delta R/C Speedway & Hobbyshop, 1201 W. 10th St., Antioch, CA 94509; (925) 778-2965

Desert Hobbies, 28-401 Date Palm Dr. Cathedral City, CA 92234; Mike Beall, (760) 202-8225

The Dirt Valley RC Racepark, 146 So. Santa Fe St., Hemet, CA 92343; Joe Christensen, (909) 925-7592

Gooch Raceway & Hobbies, 115C N. Chevy Chase Dr., Glendale, CA 91206; Devin Last, (818) 562-2380, fax (818) 242-0525

Hobby Central II Raceway, 13461 Community Rd., Poway, CA 92064; John, (858) 513-0373

Hot Rod Hobbies, 25845 San Fernando Rd., #21, San Luis Obispo, CA 93130; Rod Weisbaum, (805) 255-2404

Jake's Performance Hobbies, 6650 Commerce Blvd., #21, Rohnert Park, CA 94928; Jake, (707) 586-3375

Just for Fun R/C Raceway, 509 S. State St., Ukiah, CA 95482; Don, (707) 462-7305

M n M Hobbies, 4225 Prado Rd., Ste. 103, Corona, CA 91720; Joe Stanovich, (909) 272-3545

Paradise Hobbies, 491 Pearson Rd., Paradise, CA 95969; David Lafabregue, (530) 877-6477; fax (530) 873-2377

Racer's Haven Raceway, 7401 White Ln., #12, Bakersfield, CA 93309; Martin Buchanan, (805) 835-0441

Rams 1/8-scale Gas and 1/16-scale Gas On-Road, Mission College, Lot B, 3000 Mission College Blvd., Santa Clara, CA 95054-1897; Steve Tsuruda, (415) 675-5609

Rattlesnake Raceway, 16470 Benson Rd., Cottonwood, CA 96022; Mel or Mike Fisher, (530) 347-7215, email: RC-geez@webtv.net; website: http://members.xoom.com/CAR-RCORR/Race.html

Rescue Mini Speedway, 4018 Green Valley Rd., Rescue, CA 95672; Bruce Pease, (530) 621-3948

Ripon R/C Speedway, 701 N. Acacia Ave., Ripon, CA 95366; Dan Tanis, (209) 599-5160

R.O.C.K.S., 2525 N. Texas St., Fairfield, CA 94533; Mike, (707) 207-0305; http://members.aol.com/solanorock

Sacramento RC Racing and Hobbies, 6201 27th St., Sacramento, CA 95824; Andreas Muller, (916) 424-4001, email: andreas123@earthlink.net; website: www.77sunset.com

Simi Valley Groundpounders, 392 C - East Easy St., Simi Valley, CA 93065; Jack Kasten, (805) 584-8211

So. Cal R/C Raceway, 19118 Brookhurst St., Huntington Beach, CA 92646; Jim Blauvelt, (714) 963-7484

Speedworld Raceway, 90 Corporation Yard Rd., Roseville, CA 95678; Billy Bowerman, (916) 783-8864

Ultimate Hobbies, 2378 North Orange Mall, Orange, CA 92665; Cliff Murukami, (714) 921-0424

MHOR R/C Raceway, 15540 East Batavia Dr., Aurora, CO 80011; Jess Brockman, (303) 343-0151

Valley West Off-Road RC Club, 447 30 1/4 Rd., Grand Junction, CO 81504; Waymond Williams, (970) 242-8846

Central CT Auto Racers, Davis Hobbies II, 45A Welles St., Glastonbury, CT 06033; (860) 633-3056

East Lyme R/C Kar Klub, Society Rd., East Lyme, CT 06333; Howard Estorm, (203) 483-9201

K/N R/C Speedway Inc., West St., Stafford Springs, CT 06076; for mail, 44 Clearview Rd., Moodus, CT 06469; (860) 684-9896

Racing and Entertainment Center, 29 Olcott St., Manchester, CT 06040; Peter Tierini, (860) 643-4768

R/C Madness, 640 Enfield St., P.O. Box 64, Enfield, CT 06082; Christopher Marcy, (860) 741-6501

Xtreme Radio Control, 469 Danbury Rd., New Milford, CT 06776; Paul or Pete, (860) 354-4703

B&T RC Central, 811 Playground Rd., Ft. Walton Beach, FL 32547; Tim Miller, (850) 863-1666

Broward County R/C Race Club, Mills Pond Park, Ft. Lauderdale, FL; Ed Decemero, (954) 525-3304

Burton's R/C Raceway, 4215 Mustang Rd., Lakeland, FL 33803; Louie Burton, (941) 665-1322

Coral Springs Roadrunners, P.O. Box 9632, Coral Springs, FL 33075; John Argentino, (954) 925-8284

Dan's Hobbies, 17880 South Dixie Hwy., Miami, FL 33159; Maxy Velazco or Eric Vazquez, (305) 471-8133

Extreme Raceway and Hobbies, 4010 N. Lois Ave., Tampa, FL 33614; Mike Bevel, (813) 877-7223

Farmer's Hobby Shop & Raceway, 5006-3 E. Broadway, Tampa, FL 33619; Greg Cardone, (813) 248-3314

First Coast Speedway, 6410 Waltho Dr., Jacksonville, FL 32211; Bob Thompson, (904) 743-2161

Frontier Race Track, 15260 N.E. 244th Ave., Salt Springs, FL 32134; Harold Reel, (352) 685-2881

GB's Hobbies, U.S. 1, Port St. Lucie, FL 34953; (561) 460-2844

G & C Hobby Raceway, 1228 Hypoluxo Rd., Lantana, FL 33462; George, (561) 547-3812, fax (561) 547-5010

Greater Orlando Auto Racers, 970 Keller Rd., Altamonte Springs, FL 32714; Rob Michael, (407) 834-9299

Hobby World Raceway, 7273 103rd St., Jacksonville, FL 32210; Greg, (904) 772-9022

Kissimmee R/C Auto Racing, Model Craft World, Osceola Square Mall, 3831 West Vine St., Ste. 60, Kissimmee, FL 34741; John Rosser, (407) 944-4913; email: john@craftworldflorida.com; website: craftworldflorida.com

Means R/C Raceway, 150 Pondell Rd., North Fort Myers, FL 33903; Pete Gonzalez, (941) 772-2251; email: jaimewootton@worldatt.net; http://members.xoom.com/wootj

Monster Hobbies, 616 Southeast 10th St., Deerfield Beach, FL 23441; (954) 428-9118

Morris Kohl's Raceway and Hobby Shop, 1202 W. Waters Ave., Tampa, FL 33604; Morris Kohl, (813) 931-1626

My Rose, 1695 W. Indiantown Rd., Jupiter, FL 33458; Mark Watson, (561) 744-3800

NORRA, 3300 Santa Barbara Blvd., Naples, FL 34104; Dan Rodriguez, (941) 352-9021

Ocala Radio Controlled Car Club, P.O. Box 70166, 2612 NE 24th St., Ocala, FL 34470; Bonita Hansley, Bill Hamilton, (352) 369-1895; email: staff@ORCCC.org; www.ORCCC.org

Paradise Speedway, Mile Marker 98.5 U.S. 1, P.O. Box 738, Key Largo, FL 33037; Joe Ravard, (305) 451-3707

Paul's Stadium Raceway, 4511 W. Dr. M.L. King Jr. Blvd., Tampa, FL 33614; Paul Surette, (813) 872-8662

PBG R/C Motor Park, 6351 Barbara St., Palm Beach Gardens, FL 33418; Doug Gleason, (561) 743-9791 or Tim Case, (561) 627-2608

Pro Hobbies Speedway, 715 N. Lake Pleasant Rd., Apopka, FL 32712; (407) 886-4615

Randy's RC Raceway, 7744 Glenwood St., Clermont, FL 34711; Randy Zimmer, (352) 242-0557

River City R/C Car Club, 9711 Sharing Cross Dr., Jacksonville, FL 32257; Bill Fraden, (904) 268-1948

DELAWARE

The Hobby Outlet: Tracks of the Outlet, Salisbury Rd., Dover, DE 19901; Steve, (302) 697-8350

Hobby Stop Speedway, RD4, Box 100, Rte. 13, Seaford, DE 19973; Remy Haynes Jr., (302) 629-3944

FLORIDA

Broward County R/C Race Club, Mills Pond Park, Ft. Lauderdale, FL; Ed Decemero, (954) 525-3304

Burton's R/C Raceway, 4215 Mustang Rd., Lakeland, FL 33803; Louie Burton, (941) 665-1322

Coral Springs Roadrunners, P.O. Box 9632, Coral Springs, FL 33075; John Argentino, (954) 925-8284

Dan's Hobbies, 17880 South Dixie Hwy., Miami, FL 33159; Maxy Velazco or Eric Vazquez, (305) 471-8133

Extreme Raceway and Hobbies, 4010 N. Lois Ave., Tampa, FL 33614; Mike Bevel, (813) 877-7223

Farmer's Hobby Shop & Raceway, 5006-3 E. Broadway, Tampa, FL 33619; Greg Cardone, (813) 248-3314

First Coast Speedway, 6410 Waltho Dr., Jacksonville, FL 32211; Bob Thompson, (904) 743-2161

Frontier Race Track, 15260 N.E. 244th Ave., Salt Springs, FL 32134; Harold Reel, (352) 685-2881

GB's Hobbies, U.S. 1, Port St. Lucie, FL 34953; (561) 460-2844

G & C Hobby Raceway, 1228 Hypoluxo Rd., Lantana, FL 33462; George, (561) 547-3812, fax (561) 547-5010

Greater Orlando Auto Racers, 970 Keller Rd., Altamonte Springs, FL 32714; Rob Michael, (407) 834-9299

Hobby World Raceway, 7273 103rd St., Jacksonville, FL 32210; Greg, (904) 772-9022

Kissimmee R/C Auto Racing, Model Craft World, Osceola Square Mall, 3831 West Vine St., Ste. 60, Kissimmee, FL 34741; John Rosser, (407) 944-4913; email: john@craftworldflorida.com; website: craftworldflorida.com

Means R/C Raceway, 150 Pondell Rd., North Fort Myers, FL 33903; Pete Gonzalez, (941) 772-2251; email: jaimewootton@worldatt.net; http://members.xoom.com/wootj

Monster Hobbies, 616 Southeast 10th St., Deerfield Beach, FL 23441; (954) 428-9118

Morris Kohl's Raceway and Hobby Shop, 1202 W. Waters Ave., Tampa, FL 33604; Morris Kohl, (813) 931-1626

My Rose, 1695 W. Indiantown Rd., Jupiter, FL 33458; Mark Watson, (561) 744-3800

NORRA, 3300 Santa Barbara Blvd., Naples, FL 34104; Dan Rodriguez, (941) 352-9021

Ocala Radio Controlled Car Club, P.O. Box 70166, 2612 NE 24th St., Ocala, FL 34470; Bonita Hansley, Bill Hamilton, (352) 369-1895; email: staff@ORCCC.org; www.ORCCC.org

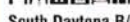
KEY TO SYMBOLS

- | | | | |
|--|-----------|--|--------------------|
| | Indoor | | Concrete |
| | Outdoor | | Asphalt |
| | Off-road | | On-site hobby shop |
| | Oval | | AC power |
| | Dirt oval | | Auto lap counting |
| | Carpet | | Food available |

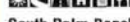
Sand Dollar Speedway, 1900 S Hwy 87, Suite 1, Navarre, FL 32566; Jim or Bev Patterson, (850) 939-8788; sanddollarspedway@aol.com; http://members.aol.com/sanddollarspedway/index.html



Santa Cruz Race Track, 8150 NW 71 St., Miami, FL 33166; Maxy or Eric, (305) 471-8133; email: maxy@iamnet.com; web: www.danshobbies.com



South Daytona R/C Raceway, 2121 S. Ridgewood Ave., South Daytona, FL 32119; Mike Bean, (904) 426-6481



South Palm Beach Racers, South County Regional Park, West Boca Raton, FL 33486; Mike Fazio, (561) 338-5367



Superior Hobbies R/C Parking Lot Racing, 1478 Semoran Blvd., Casselberry, FL 32707; Rob Michael, (407) 834-9299; www.superiorhobbies.com; racing@superiorhobbies.com



University RC Speedway, 8475 Cooper Creek Blvd., University Park, FL 34201; Mike Boylan, (941) 358-7047



GEORGIA

Anthony's Victory Lane, 129 East Hwy 80, Pooler, GA 31322; Anna Stephens, (912) 748-0847



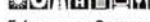
Augusta R/C Racer's Club, 3628 Crawfordville Rd., Augusta, GA 30909; Darren, (706) 364-5608



Bullet Raceway and Hobby, 3735 Old Flowery Branch Rd., Oakwood, GA 30566; Mark Taaffe, (770) 534-9229



Dalton Raceway, 3036 Parquet Rd., Dalton, GA 30720; (706) 226-6699



Echeconnee Superspeedway, 2149 Richardson Dr., Macon, GA 31206; Andy Thompson or Cliff Kline, (912) 788-8731



Emerald City R.C. Speedway, Highway 40 East, East Dublin, GA, 31021; Terry Cook, (912) 272-3856



The Flight Box Hobby Shop, 3134-C Rockmart Rd., S.E., Rome, GA, 30161-6826; Leslie Duke, (706)-234-3014



Hobby Town Raceway, 2301 Airport Thruway, Columbus, GA 31904; Frank Bastos, (706) 660-1793



Phil Hurd Raceway, 15 W. York Ln., Savannah, GA 31401; J. Filippow, (912) 232-9985; jfilippow@scad.edu



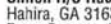
Prime Time Hobby and Crafts, 432 South Wall St., Calhoun, GA 30701; Vicky or Tommy, (706) 625-9037; www.rcracing.com



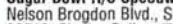
Sandy Cross Speedway, Rt. 1, Box 1071, Hwy. 51, Royston, GA 30662; Morris Phillips or Wayne Fowler, (706) 245-9573



Shiloh R/C Raceway, 6362 Shiloh Rd., Hahira, GA 31632; Doug Burnett, (912) 794-2507



Sugar Bowl R/C Speedway, 5272 Nelson Brogdon Blvd., Sugar Hill, GA 30518; Shelley Bailey, (770) 945-6709



HAWAII

Garden Isle R/C Racers, 5855 Ahakea St., Kapaa, Kauai, HI 96746; Arnold Morales, (808) 823-0856



Kakaako Water Front Park Drayage, 98-029 Hekaha St., Bay #32, Alea, HI 96701; James Inkyo, (808) 487-5155



Mauli R/C Racing Association, 230 Hana Hwy., Unit 11, Kahului, HI 96732; Garret or John, (808) 873-0376, (808) 893-0116, or (808) 646-6687



Pearl City Raceway, 98-029 Hekaha St., Bay 32, Alea, HI 96701; James Inkyo, (808) 487-5155



Radio Control Hawaii, 474 Kalanikoa St., S-104, Hilo, HI 96720; Glenn Shiroma, (808) 935-5629



Team PRC Racing Club, 176 Mamo St., Hilo, HI 96720; Charlie, (808) 935-3561



Triangle R/C Racing, 1870 CR 1600 N, Urbana, IL 61803; Scott Weaver, (217) 469-0121



IDAHO

Almosta Ranch Speedway, 1732 Elbridge Ave., Twin Falls, ID 83301; Casey Clements, (208) 733-8219



Boise Hobby Raceway, 4516 Overland Rd., Boise, ID 83705 Jim, (208) 363-9555



Capital Dirt Burners, 1612 Latah, Boise, ID 83706; Jim Small, (208) 433-1631; Matt Barr, (208) 378-1110



Dirt Stuff Plus, 5344 N. Yellowstone Hwy., Idaho Falls, ID 83401; Brian Krah, (208) 522-7576



ILLINOIS

Adams R/C Raceway, 7201 S. Adams, Bartonville, IL 61607; Ray Tighe, (309) 633-9300



AJ's Raceway & Hobby, 10211 Keslinger Rd., DeKalb, IL 60115; A.J. Schultz, (815) 756-2772



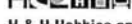
C.I.R.C.A., 905 Bibbs St., Jacksonville, IL 62650; Sport 'n' Hobby; (217) 245-1375



C&R Hobbies, 39 E. Jones, Milford, IL 60953; Ray, (815) 889-4073



Depot Hobby Raceway, 180 S. Seminary St., Galesburg, IL 61401; (309) 342-9323



H & H Hobbies and Raceway, 9346 Virginia Rd., Lake in the Hills, IL 60102; Mike Hollingsworth, (847) 458-1777



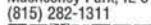
HobbyTown Raceway, 2103 N. Veterans Pkwy., Bloomington, IL 61701; Gary Pritts, (309) 664-4451



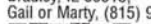
Leisure Hours R/C Raceway, 24121 W. Theodore, Bldg. 1, Plainfield, IL 60544; Scott Hill, (815) 439-1777 (track), (815) 439-1477 (shop)



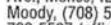
Machesney Park, 1220 Shappert Dr., Machesney Park, IL 61115; (815) 282-1311



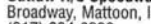
Marty's R/C Hobby, 1335 E. Broadway, Bradley, IL 60915; Gail or Marty, (815) 933-8441



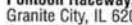
Monee R/C Raceway, 26049 Ridgeland Ave., Monee, IL 60449; Roy or Roberta Moody, (708) 534-2422 (track), (708) 799-5597 (office)



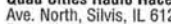
Outlaw R/C Speedway, 1614 Broadway, Mattoon, IL 61938; (217) 234-6229



Pontoon Raceway, 3670 St. Rte. 111, Granite City, IL 62040-4304; Pat or Skip, (618) 931-1206



Quad Cities Radio Raceway, 541 1st Ave. North, Silvis, IL 61282; Tom Bedwell, (309) 751-9663



Radio-Active Raceway, 751 N. Bolingbrook Dr., #15, Bolingbrook, IL 60440; Jim, (630) 759-7557



Rector's R/C Raceway, RR 3, Box 104, Albion, IL 62806; Tim Wolfe, (618) 842-9379 (M-F), (618) 446-3282 (Sun.)



RMR Raceways, 19091 West Casey Rd., Libertyville, IL 60048; Ron Rawald, (847) 549-6963



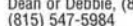
Shiloh Eagles Superspeedway, 308 N. Virginia Ave., Belleville, IL 62220; (618) 277-6030



Stanton Hobby Shop, 4718 N. Milwaukee, Chicago, IL 60630; Kevin Kane, (773) 283-6446



Valley Farms R/C Raceway, 706 Bypass 20, Cherry Valley, IL 61016; Dean or Debbie, (815) 332-4516 or (815) 547-5984

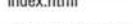


Wep Speedway, RR #2, Box 44, Lawrenceville, IL 62439; Bill Poe



INDIANA

BD R/C Off-Road Racing, 13255 Chippewa, Mishawaka, IN 46545; Betty or Bob, (219) 257-1098; 02kie@aol.com; www.angelfire.com/in/bdrcffroad/index.html



Bremen Racing Ent., 308 N. Bowen, Bremen, IN 46506; Dale Heuberger, (219) 546-3807



The Dirt Yard, 1117 W. Epler Ave., Indianapolis, IN 46217; Keith Dudas, (317) 786-6417



GM Raceway, 1651 W. Franklin St., Elkhart, IN 46516; Pete Russell, (219) 293-1827



Hardesty R/C Raceway, 11 East Plymouth St., Hamlet, IN 46532; Max Hardesty, (219) 867-8600 or (219) 772-6566



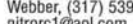
Hobby Barn Raceway, 1950 Springhill, Terre Haute, IN 47802-9694; (812) 299-5773



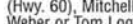
Hobbytown U.S.A., 5385 E. 82nd St., Indianapolis, IN 46250; Bill Scott, (317) 845-4106



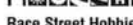
Nitro R/C Speedway, 4310 West 400 South, Danville, IN 46122; John Webber, (317) 539-4413; email: nitrocr1@aol.com



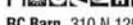
P&T Hobbies and Raceway, RR 2 (Hwy. 60), Mitchell, IN 47446; Paul Weber or Tom Logsdon, (812) 849-6666; email: pnthobby@bigfoot.com



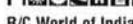
Race Street Hobbies, 1126½ Race St., New Castle, IN 47362; Jim Burke, (765) 521-4888



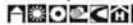
RC Barn, 310 N 125 W, Monroe, IN 46722; Mark Lengerich, (219) 692-6600



R/C World of Indiana, 2246 West U.S. Hwy. 36, Lynn, IN 47355; Joe Kulp, (765) 874-2464; e-mail: rcworld@glob-alsite.net; web: www.RCWORLD.com



R/C Mania, 8 Wood Ct., Hebron, IN 46341; Ron Traubach, (219) 996-6288 (shop); (219) 762-5365



Showtime Lot Racing, 606 Lower Huntington Rd., Fort Wayne, IN 46815; Mike Romines, (219) 478-6099



Summit Area Radio Cars (SARC), 7000 Red Haw Dr., Fort Wayne, IN 46805; John Kissel, (219) 492-2271



IOWA

Delb's Speedway, 423 11th Ave. So., Clinton, IA 52732; Rusti's Miniatures and Hobbies, (319) 243-2697



Hobby Haven, 7672 Hickman Rd., Des Moines, IA 50322; Rick Marble, (515) 276-8785



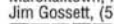
IROAR—Hawkeye Downs Raceway, Hawkeye Downs, 6th St. S.W., Cedar Rapids, IA 52404; Dave Kleinschrodt, (319) 556-8524



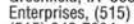
Manly R/C Club, Box 23 (Hwy. 65), Manly, IA 50456; Bruce Hill, (515) 454-2025



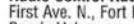
Mr. Car Raceway, P.O. Box 1112, Central Iowa Fairgrounds, Marshalltown, IA 50158; Jim Gossett, (515) 483-2234



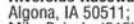
Outback Speedway, 108 West Iowa, Greenfield, IA 50849; Helens Enterprises, (515) 747-3064, trackside (515) 343-7004



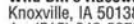
Radio Control Raceway Park, 2100 First Ave. N., Fort Dodge, IA 50501; Bernie Halverson, (515) 576-3780



Riverside Raceway, Veteran's Park, Algona, IA 50511; Mike Beisch, (515) 295-9352



Wild Bill's Raceway, 901 W. Jones, Knoxville, IA 50138; William Anderson Jr., (515) 842-5973



KANSAS

Creeks Crossing Speedway, 2340 Military Rd., Baxter Springs, KS; Richard, (316) 856-5086



Ebersole Hobby and Raceway, 11417 W. Hwy. 54, Wichita, KS 67209; Sherri McWilliams, (785) 722-8888



Hobbytown USA, 2016 W. 23rd, Lawrence, KS 66046; Kevin Decembarus, (785) 865-0883



Mike's R/C Hobbies, 121 SE 29th St., Unit #3, Topeka, KS 66605; Mike Barnard, (913) 266-5767



Ottawa Outlaw Raceway, 114 South Main, Ottawa, KS 66067; Tom Wilson, (913) 242-1450



R/C Superdome and T.Q. Pro Shop, 14 E. Avenue A, Hutchinson, KS 67501; Cody or Joe, (316) 665-6633



R.C.R.C. Raceway of Salina, 1300 E. Crawford, Bill Burke Park, Salina, KS 67401; Calvin, (913) 823-9588



T.Q. Pro Shop, 14 E. Ave. A, Hutchinson, KS 67501; Cody Jandrakovic, (316) 665-6633

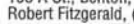


KENTUCKY

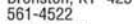
Dixon's R/C Raceway, 1428 Lost Creek Rd., Hazard, KY 41701; Jeff Dixon, (606) 436-4820



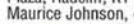
Pit Stop Hobbies, 106 A St., Benton, KY 42025; Robert Fitzgerald, (270) 443-0052



Somerset Raceway, 188 Sycamore Dr., Bronston, KY 42518; Denny, (606) 561-4522



Trio Hobbies & R/C, 216 Redmar Plaza, Radcliff, KY 40160; Maurice Johnson, (502) 351-7547



LOUISIANA

Baton Rouge Velodrome, 7122 Perkins Rd., Baton Rouge, LA 70815; Weldon Sharon, (225) 665-5616



Gator R/C Raceway, 3691 Hwy. 171 N., Lake Charles, LA 70611; Tony Diaz, (318) 855-3206



Pontchartrain Hobby Shop, 3755 Pontchartrain Dr., Slidell, LA 70458; (504) 649-1199



MAINE

Clay Bowl R/C Hobbies, P.O. Box 61, Greene, ME 04236; Pat Cap, (207) 946-5003



R/C Speedway & Hobbies, 87 Main St., Fairfield, ME 04963; David Prescott, (207) 453-4588



MARYLAND

Doug's Raceway, 2935 Crain Hwy., Waldorf, MD 20601; Doug Moran Jr., (301) 843-6220



Hobby Town USA, 8223-11 Elliot Rd., Easton, MD 21601; Bill Dyke, (410) 820-9308

Larry's Performance R/Cs, 43665 Utica Rd., Sterling Heights, MI 48314; Larry, (810) 997-4840


Lazer RC Speedway, 2858 N. Wilmoth Hwy., Adrian, MI 49221; Russ Johnson, (517) 263-2806


Motor City Speedway, 1602523, mile Rd., Macomb Township, MI 48042; Gary Cornwell, (810) 677-2470


N.M.R.C.C. Raceway, Hobby Toy, Main St., Gaylord, MI 49735; Ed Schneider, (517) 732-3963


Ovalt's R/C Speedshop, 3920 N. U.S. 31 S., Traverse City, MI 49684; Jim Ovalt, (616) 947-6670


R.A.C.E. Inc., 3227 Mathews, Jackson, MI 49203; Sam Sprang, (517) 787-9161


Raw Roots Race Tracks, 14623 East Crosswell, 1/4 mile north on 152nd (off U.S. 31), West Olive, MI 49460; Roy Bennink, (616) 399-9338


R&L Hobbies & Racing, 9782 Portage Rd., Portage, MI 49002; Rex Simpson, (616) 323-3686; fax (616) 329-1744; email: rinfo@rlhobbies.com; www.rlhobbies.com


Robby's Hobbies, 1106 Columbus, Bay City, MI 48708; Dan, (517) 893-2712


Rodgers R/C Raceway, 7463 Ridge Rd., Britton, MI 49229; George Rodgers, (517) 451-8301


Superior R/C Raceway, 160 S. County Road 553, Lot 173, Gwinn, MI 49841; Frank Felster, (906) 346-7225


Thumb Raceway, 3441 Main St., Marquette, MI 49853; Jim Wilson, (517) 635-7848


Vicksburg Off-Road R/C Raceway, 50201 Silver St., Vicksburg, MI 49097; Tim, (616) 323-7963


T.J.'s RC Raceway, Rt. 2, Box 22C, Luther, MI 49656; Tod Smart, (616) 797-8035

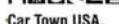

Village Hobbies-n-Crafts, 195 N. Elm, Hesperia, MI 49421; Alan or Fran, (616) 854-1374

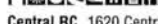

Village R/C Raceway, Prairie Ronde St., Decatur, MI 49045; Chuck Nolke, (616) 423-7878


Washtenaw R/C Raceway, Ypsilanti, MI 48198; Jim Rousseau, (734) 395-5048


Willis Outdoor R/C Racetrack, 13922 Oakville-Waltz Rd., Willis, MI 48191; Mike Higgins, (734) 587-2012


MINNESOTA

Bemidji R/C, 1015 Miles Ave. S.E., Bemidji, MN 56601; Russ or Ryan, (218) 751-1629


Car Town USA, 2822 Piedmont Ave., Duluth, MN 55811; Roger Deloach, (218) 727-6248


Central RC, 1620 Central Ave., Minneapolis, MN 55303; Doug Ringold, (612) 781-1640


Country R/C Raceway Park, 24214 325th St., Belview, MN 56214-8115; Charles L. Steff, (507) 641-8115


Duey's Hobbies & R/C Raceway, 6600 Cahill Ave., Inver Grove Heights, MN 55076; Duey Carlson, (612) 450-1721


Granite City R/C Speedway, 3555 Shadowwood Dr. N.E., East Hwy. 23, Sauk Rapids, MN 56379; Brett Donahue, (320) 251-6980


J's Radio Control Race Park, 22994 290th Ave., Starbuck, MN 56381; Jay Campbell, (320) 239-4827

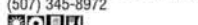

Kevin's Private Off-Road Raceway, 702 So. Washington Ave., Crookston, MN 56716-2317; Kevin Altepeter, (218) 281-7523 or (218) 281-7491; www.rvv.net/krc; email: kevin@rvv.net; (note: registration required for permission of use)


Northwoods Hobby Raceway, 2638 Hwy. 25 North, Brainerd, MN 56401; Tom Grogg, (218) 829-9257


Ray's Raceway Park, 105 3rd Ave. NE, Glenwood, MN 56334; Dan Winter, (320) 634-5246


R/C Racing World, 235 Main Ave. North, Harmony, MN 55939; Mark McKay, (507) 886-5931 or (507) 886-2224


Red Barn RC Raceway, Rt. 4, Box 333, Markato, MN 56001; Rusty Weiss, (507) 345-8972

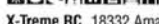

Southside Speedway, 2241 Marion Rd. SE, Rochester, MN 55904; Kevin Guy, (507) 281-3233


Sport Zone RC Race Park, 32339 Harris Town Rd., Grand Rapids, MN 55744; Greg, (218) 326-8956


Time R/C Raceway, 20 West Lake St., Chisholm, MN 55719; RV, (218) 254-4321


MISSISSIPPI

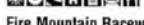
Joe McFadden Hobbies, 5531 Fox Meadow Dr., Meridian, MS 39307; Joe McFadden, (601) 483-7000


Small Cars Unlimited, 820 Cooper Rd., Jackson, MS 39212; (601) 372-FAST; www.smallcarsunlimited.com


X-Treme RC, 18332 Amanda Ln., Saucier, MS 39574; Marty Capers, (228) 539-2004


MISSOURI

All Seasons Hobby, 29 O'Fallon Square, O'Fallon, MO 63368; Bob Daniels, (314) 281-8767


B&L Hobbies & Raceway, 2800 Anchor Dr., Park Hills, MO 63061; Bob Marler, (573) 431-9444


Fire Mountain Raceway, 8647 Commercial Blvd., Pevelly, MO 63070; Dan Gordon, (314) 475-6449


Greentree R/C Racepark, St. Louis Dirt Burners R/C Club, Marshall Rd., Kirkwood, MO; (314) 831-2194

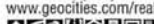

Hobbies 'N' Stuff Raceway, 204 Mail Pkwy., Wentzville, MO 63385; Tim Satchwell or Crandall Olds, (314) 327-6006


North Missouri Raceway, 223 Graves St., Chillicothe, MO 64601; Billy Johnston, (660) 646-1120


Novelty R/C Raceway, Rt. 1, Box 132A, Novelty, MO 63460; Rex or Jena, (660) 739-4546; email: rexjen@marktwain.net


Ozark Mountain Speedway, Rt. #2, Box 50, H-Highway and County Rd. 31, Noel, MO 64854; Clayton Younker, (417) 475-6222


Ozarks R/C Raceway, Hwy 13N, Brighton, MO 65781; Gene Rhodes or Ron Hawkins, (417) 742-4376 or (417) 742-7223


Real Blue Vue Speedway, 12019 E. 47th St., Kansas City, MO 64133; Steve Hale, (816) 358-0238; www.geocities.com/real_rc_raceway


Real R/C Raceway, 24204 State Rt. 58, Pleasant Hill, MO 64080; Steve Hale, (816) 540-5584


MONTANA

Stormer Raceway & Slot Motorplex, P.O. Box 126, Hwy. 2 East, Glasgow, MT 59230; (406) 228-4569


NEBRASKA

Goodyear Speedway and Off-Road, 4021 North 56th, Lincoln, NE 68510; Tom or Bob, (402) 464-5172


Hadar R/C Raceway, 55192 849th Rd., Norfolk, NE 68701; John Schoenauer, (402) 644-7922


Hobby Town USA Raceway, N. 1st St. & Cornhusker Hwy., Lincoln, NE 68508; Ben Smith, (402) 434-5056


Mr. Bill's, 450 West 2nd St., Hastings, NE 68901; Bill J. Ries, (402) 462-4865


O.N.R.O.A.D., 3307 N. 58 St., Omaha, NE 68104; Cook Jacobs, (402) 556-8674

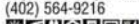

OTWG Carpet Raceway, 55129 849th Rd., Norfolk, NE 68701; John Schoenauer, (402) 644-7922


RC Motorsport Off-Road Raceway, 5600 Mass Rd., Papillion (Omaha), NE 68133; Marty Stepanek, (402) 593-6133


Salvation Army South Corps, 4032 Harrison St., Omaha, NE 68164; (402) 734-3414; fax (402) 734-3415

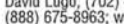

T & T Raceway, 476 26th Ave., Columbus, NE 68601; Tom, (402) 564-9216


The Speed Zone, 1524 Atokad Dr., South Sioux City, NE 68776; Rob Murdock, (712) 428-4679, or Jim Carson, (712) 274-7731


Wacha's R.C. Speedway, 1823 23rd St., Columbus, NE 68601; Tom Smith, (402) 564-9216


NEVADA

Bill's Hobby Shop, 1000 N. Nellis Blvd., Las Vegas, NV 89110; Bill Schultz, (702) 531-3282; website: www.billshobbyshop.com


Dansey's Indoor R/C & Hobbies, 741 N. Nellis, Las Vegas, NV; David Lugo, (702) 453-RACE, (888) 675-8963; www.danseys.com


Lizard Raceway, P.O. Box 1248, Verdi, NV 89439; Jeff Griffin, (702) 345-6573


NEW HAMPSHIRE

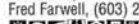
Axis Racing R/C Dragway, 4197 High St., Exeter, NH 03833;v Dan Peterson, (603) 659-4877


Economy R/C Speedway, 4 Maple St., Winchester, NH 03470; Harold Thomas, (603) 239-4482 or 239-6470


Lakes Region R/C Speedway, Lily Pond Rd., Gilford, NH 03246; (603) 524-2909, or (603) 524-2628


North Haverhill R/C Racing, Main St., N. Haverhill, NH 03774; Shelly White, 111 Golf Links Rd., Wells River, VT 05081; Todd White, (802) 757-2579


Robert's Railroad & Hobbies, 1335 1st NH Turnpike—Rt.4, Northwood, NH 03261; Robert M. Jeffers Jr., (603) 942-5193


RT 106 Racepark, 743 Clough Mill Rd., Pembroke, NH 03275; Fred Farwell, (603) 224-RACE


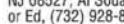
NEW JERSEY

American Raceway, 142 Wilson Ave., Englishtown, NJ 07726; Doug Venner, (732) 446-3737; email: DMC12@prodigy.net

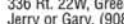

America's Hobby Center Inc., 8300 Tonnelle Ave., North Bergen, NJ 07047; John Many, (201) 662-0777


Checkerboard Raceways, P.O. Box 240, Elwood, NJ 08217; Ray Murray, (609) 629-4809


Family Hobbies Raceway, 3576 N.W. Blvd. & Weymouth Rd., Vineland, NJ 08360; Linda Vogel, (609) 696-5790


Jackson R/C Racing, P.O. Box 565, Christopher Columbus Blvd., Jackson, NJ 08527; Al Sodano, (732) 364-6422, or Ed, (732) 928-8963


Jefferson Speedway, 5494 Berkshire Valley Rd., Oak Ridge, NJ 07438; (201) 697-7525


Jerry's Hobby Center & Raceway, 336 Rt. 22W, Greenbrook, NJ 08812; Jerry or Gary, (908) 752-6030


LBRA Track, 392 Warburton Pl., Long Branch, NJ 07740; (908) 222-5122


Millville R/C Oval, 114 N. High St., Millville, NJ 08332; William Denstoz, (609) 327-4640


On Trax Hobbies, 3101 Rte. 70, Browns Mills, NJ 08015; Joseph DiGirolamo, (609) 735-0422


South Jersey Cost Controlled Racing, 25 Jackson Ln., Sicklerville, NJ 08081; Ray Murray, (609) 629-4809


The Race Place, 1151 Hwy. 33, Farmingdale, NJ 07731; John Fary, (908) 938-5215


NEW MEXICO

Big Boys Toys Raceway, 1735 Juan Tabo, Albuquerque, NM 87112; Isaac Garcia, (505) 298-1023; www.bigboytoys.theshoppe.com


Las Cruces R/C Racing Association, Meerscheidt Recreation Center, Walnut and Hadley by BMX, Las Cruces, NM 88001; Robert, (505) 526-6856 or Jim, (505) 527-4284; email, jade@zianet.com; www.zianet.com/jade/lcrra.htm;

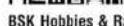

NEW YORK

B&S RC Speedway, 15661 Route 31, Albion, NY 14411; Dan Beller, (716) 589-0621; bandsspeedway@go.to; www.go.to/bandspeedway


BarnStormers Speedway, 205 Gray Court Rd., Chester, NY 10918; Lou, (914) 469-6468; trackside (914) 469-8206

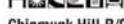

Brennan's R/C Hobbies, 6368 State Rt. 5, Vernon, NY; Bill or Tom Brennan (315) 829-4930


Brownie's Pro & Sport Hobbies, 124 Bennett St., Staten Island, NY 10302-1426; John Brown, (718) 727-2194


Bruckner Racing, 2908 Bruckner Blvd., Bronx, NY 10465; Thomas Buffers Sr., (800) 288-8185


BSK Hobbies & Raceway, 120 Main St., Horel, NY 14843; Bruce Harris, (607) 324-4011, (800) 603-0197


C&D Raceway, 12542 NYS Rte. 12E, Chaumont, NY 13622; Chris or Don Bourquin, (315) 649-5403


Capital District R/C Racers, 27 Venus Dr., Albany, NY 12211; Peter Willis, (518) 482-7128


Chipmunk Hill R/C Speedway, 217 Pine St., Theresa, NY 13691; Ted or Pete House, (315) 628-5065


Competition Hobby Speedway, 1006 Loudon Rd. Rte. 9, Latham, NY 12047; Howie or John, (518) 786-3622


East Coast Hobbies Race Club, Floyd Bennet Field, Brooklyn, NY 11204, for mail, 2515-65th St., Brooklyn, NY 11204; Brian Cardella, (718) 627-3814


Fastraks, Mini Pines Village, Hogsburg, NY 13655; Mark (518) 358-3686


Foothills R/C Speedway, 3200 Chestnut St., Oneonta, NY 13820; Dave Osterhoot, (607) 432-5098


Frogdown Hobbies, Rt. 37, Mini Pines Village, Hogsburg, NY; 13655; Dennis, (518) 358-3686


Hacr's Hobbies & Raceways, 120 Cayuga St., Canal View Mall, Fulton, NY 13069; Jack LaTulip, (315) 598-7063


Jerry's Raceway, 111 S. Applegate Rd., Ithaca, NY 14850; Jerry and Lori Achilles, (607) 277-0940


Li 1/4-Scale Racers, 63 Horton Dr., Huntington Station, NY 11746; (516) 351-5384


Long Island Raceway, 168 Broad Hollow, Farmingdale, NY 11735; James, (516) 845-7223; www.raceway.com


MTW Raceway, 11930 Johnny Cake Hill Rd., Cato, NY 13033; Tim, (315) 626-2029; (888) 39-HOBBY

South Shore Hobby & Raceway
464 East Main St.,
Patchogue, NY 11772;
Benny or Bonnie, (516) 758-5567


Tri County Remote Control Car Club,
33 West Decker St., Johnstown, NY 12095;
Tom Leville, (518) 725-1279


TARMAC—Ultimate R/C Raceways,
28/30 Mountain View Rd., Poughkeepsie,
NY 12603; Todd, (914) 342-5409;
Greg, (914) 528-5084;
trackside, (914) 454-8276;
www.tarmacraceway.com


Walt's Hobby, 2 Dwight Park Dr.,
Syracuse, NY 13209; (315) 453-2291


Westfield R.C. Speedway, 27 Clark St.,
Westfield, NY 14787;
John or Jared Lindstrom,
(716) 326-2339; 716-326-2309

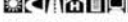

Whitestone, 30-56 Whitestone Expy.,
(Dept. of Motor Vehicles), Flushing, NY
11374; Rudolf Arilla, (718) 966-6155

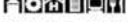

Willis Hobbies R/C Speedway, 300
Willis Ave., Mineola, NY 11501;
Ken Ford, (516) 746-3944


ZOAR Road Speedway, 15318 Armes
Ct., Gowanda, NY 14070; David &
Gordon Ackler, (716) 532-9463


NORTH CAROLINA

A&J R/C Models, 2051 Anthony Rd.,
Burlington, NC 27215; Jerry Loe or
Andrea Thompson, (336) 227-4556;
fax (910) 227-1001

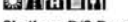

The Antique Barn, 2810 Forest Hills Rd.,
Wilson, NC 27893; (252) 237-6778


Atlantic Coast R.C., 8-A Lockhead Ct.,
Greensboro, NC 27409; Charlie Higgins
or Harry Johnson, (336) 664-1277


Badin Shore Raceway, 1730 Jackson
Lake Rd., High Point, NC 27263; Jimmy
or Tim Martin, fax (910) 431-6407

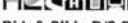

C/C Hobby Speedway, 8358 U.S. Hwy.
220 Bus. N., Randleman, NC 27317;
Steve & Mary Cox, (910) 495-3482


C/W R/C Speedway, 1297 Charlotte
Hwy., Asheville, NC 28730;
Billy or Tim, (828) 684-0061


Carolina Dragway, 1555 Turkey Hwy.,
Clinton, NC 28328; (910) 592-9489


Chatham R/C Raceway, 326 Reno
Sharpe Store Rd., Bear Creek, NC
27207; Dwight Fields, (919) 898-2991


Green Flag RC Raceway, 107 Harley
Rd., Wilmington, NC 28401; Mike
McLemore, (910) 452-1620


R & D Speedway, 418 Main St.,
Tarboro, NC 27886;
John Dupree, (919) 823-2294


Ride & Slide R/C Raceway, 5319
Yadkin Rd., Fayetteville, NC 28303; Bill
Culbertson, (910) 867-4202


Radio Jockey's Parkway, "RJ's,"
Rt. 9, Box 651, Fay, NC 28301;
www.wave-net.net/mshutt;
Tony Starling, (910) 486-4820


R.C.R. Speedway, 1415 Henderson
Grove Church Rd., Salisbury, NC
28147; Ronnie Linker, (704) 637-2565


Rosewood R/C Speedway, 651
Community Dr., Goldsboro, NC 27530;
Glenn Elam, (919) 734-7754


Southern RC Motorsports Club, Hwy.
17S., P.O. Box 1651, Shallotte, NC
28459; Mark Whitt, (910) 754-4902 or
Eddie Ferster, (910) 754-8528


Youngsville R/C Club, 6516 NC 96
Hwy. W., Youngsville, NC 27596; James
Ray, (919) 556-0446


NORTH DAKOTA

Northern Mini Racers,
1000 36th St. S.E., Minot, ND 58702;
Mike, (701) 838-5818


River City R/C, 2714 Main Ave., Fargo,
ND 58103; Chris, (701) 235-1272


OHIO

AK Hobby and Raceway,
3826 North Bend, Cincinnati, OH
45211; Tim Tolle, (513) 661-7080


American Ohio Sprint Car, 1708
Empire Rd., Wickliffe, OH 44092;
Gary Waldheim, (440) 944-9966

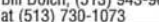

Classic Hobbies, 1994 E. Waterloo
Rd., Akron, OH 44312; Walt Ellis,
(330) 733-6400


CORCAR/Sams Club, 128 Amity Rd.,
Galloway, OH 43119-8732;
Bill Stevenson, (614) 870-7159


Columbus R/C Racing Club
(C.R.C.R.C.), Franklin County
Fairgrounds, Hilliard, OH 43026;
Jeff Crowell, (614) 236-1783


D&J R/C Raceway, 801 W. Market St.,
Orrville, OH 44667; Don Yoder or Mark
Nussbaum, (330) 682-4266


DeFosse Raceway, 7652 Gooselick
Rd., Ripley, OH; Greg DeFosse, (937)
377-2063


Full Throttle Raceway, 600 Mt. Moriah
Dr., Cincinnati, OH 45255;
Bill Dolch, (513) 943-9009 or via pager
at (513) 730-1073


Glass City Radio Control, 2620 Ivy Pl.,
Toledo, OH 43613;
Frank Johnson, (419) 472-1286

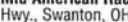

Greentown R/C Raceway, 3353
Perrydale, Greentown, OH 44630;
Chuck Lambert, (330) 364-6585


Hobby Shop Raceway, 2096
Miamisburg Centerville Rd.,
Centerville, OH 45459;
The Hobby Shop, (937) 436-6161


Hobby World, 3499 SR 59, Ravenna,
OH 44266; Tom Fry, fax (330) 296-
0894


J & L R/C Raceway, 5342 W. St. Rt.
718, Troy, OH 45373; Mike Wegman,
(513) 521-3408; email: wegs@one.net

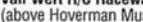

Lafferty R/C Raceway, Box 153, 70228
Hurrah St., Lafferty, OH 43951;
Chris Christman, (740) 968-4818


Mid American Raceway, 13150 Airport
Hwy., Swanton, OH 43558;
Bill or Chuck, (419) 475-9459


Nothing But Air R.C. Track, 34632 True
Rd., Logan, OH 43138;
Gary Lloyd, (740) 385-0288


R&R Speedway, 1258 W. Alexis,
Toledo, OH Ron Tennison,
(734) 665-2849;
www.mrspeedway.iwarp.com


TARCAR, 7216 Nebraska Ave., Toledo,
OH 43617; Bill Bridges, (419) 826-3859


Van Wert R/C Raceway, 144 E. Main St.
(above Hoverman Music), Van Wert, OH
45891; Mark Davis, (419) 232-2112


Y-City Hobby & Speedway, 120 S. 6th
St., Zanesville, OH 43701;
Kevin McKenna, (674) 455-3025


OKLAHOMA

Adams Creek R/C Speedway, 5207 S.
194th E. Ave., Broken Arrow, OK
74014; John Beighle, (918) 355-1416


Competition R/C, 100 S.E. 89th,
Oklahoma City, OK 73149; James or
Louise Brown, (405) 634-0809

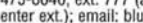

Enid R/C Speedway, 1821 S. Van
Buren (Hwy 81), Enid, OK 73701; Bob,
(580) 233-3344 or (580) 234-7666

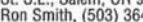

R/C Speedway of Lawton, 202
Southeast B Ave., Lawton, OK 73501;
Rick (580) 355-8040


Wild Country Speedway, 127 S. Main,
Porter, OK 74454; Charles McCollough,
(918) 685-0372 or
(918) 687-1686


OREGON

Competition Racing Association,
17941 N.E. Gleason, Portland, OR
97230; Mark Taylor, (503) 761-1334


D.I.R.T. R.O.A.D. Club, 65540 73rd
St., Bend, OR 97701; Daleyne and
Edward Giletz, (541) 388-2932 or (800)
475-6040, ext. 777 (at 2nd dial tone,
enter ext.); email: blue@coinet.com


R/C Plus Hobbies Raceway, 1857 25th
St. S.E., Salem, OR 97302;
Ron Smith, (503) 364-9188


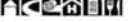
R/C Speed Center, 2810 N. Pacific Hwy.,
Medford, OR 97501; Gene and Betty Jean
Skelton, (541) 779-8298


Rose City Scale Racing, Highway 224,
K-Mart parking lot, Milwaukie, OR
97222; Rick Strauss, (503) 631-2929


Yamhill County R/C Car Club, 722
Morgan Ln., McMinnville, OR 97128;
Larry Rucker, (503) 472-7234


PENNSYLVANIA

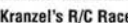
B&B Raceway, 1301 Pine St., Berwick,
PA 18603; Ray Berry Jr.,
(717) 759-3469


Courtview Raceway, 20 S. Main Street
(lower level), Washington, PA 15301;
Aaron Stimmel Jr., (724) 225-4302


DC Ultra Trax, 13 York Rd.,
Wycombe, PA 18974;
David Cowan, (215) 672-5200


D&D Hobby Shop, 305 3rd St.,
Rouseville, PA 16344; (814) 676-4475

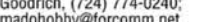

Dreamboat Hobbies, 2810
Pennsylvania Ave. W., Warren, PA
16365; Louie Dussia, (814) 723-8052

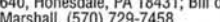

Koontz's Home & Hobby Center,
1205 Hoover St., Pittsburgh, PA
15204; (412) 331-3866


Kranzel's R/C Raceway & Hobbies,
415-B Bosler Ave., Lemoyne, PA
17043; David or Stuart Kranzel,
(717) 737-7223


Little Plum R/C Hobbies, RR 1, Box
330, Lock Haven, PA 17445; Larry
Duck, (570) 769-1984


Lugnut Raceway, 1713 Bethlehem
Pike, Hatfield, PA 19440; Bill Henning
or Kathy Anderson,
(215) 822-5831

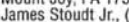

Mad-O Hobby Raceway, 850 Freedom
Crider Rd., Freedom, PA 15042; Don
Goodrich, (724) 774-0240;
madohobby@forcomm.net


Marshall's R/C Raceway, RR 4, Box
640, Honesdale, PA 18431; Bill or Dot
Marshall, (570) 729-7458


McCullough's Offroad, 108 Callen Rd.,
Sarver, PA 16055; Doug McCullough,
(724) 352-0116; email:
DMCull323@aol.com


The Mushroom Bowl, 960 W. Cypress
St., Kennett Square, PA 19348;
Bruce or Drew, (610) 444-1850


Pinion Twisters, 3M Plant, Green Ln.
and Mitchell, Bristol, PA 19007;
Mark, (215) 632-2344
or Tony, (215) 742-3560


Pit Stop Hobbies, 262 W. Main St.,
Mount Joy, PA 17552;
James Stoudt Jr., (717) 653-6222


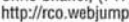
Prop & Wheels Raceway, 139 W.
Broad St., Tamqua, PA 18252; Gil
Walters, Prop & Wheels Hobbies, (570)
668-2288

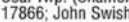

Racers Edge R/C Racing, RR#1, Box
271, Smethport, PA 16749; Rick
Morgan or Johna Simar, (814) 887-
2269; email: morg@penn.com;
web:users.penn.com/~morg/track.html


The Raceway at River Junction,
1216 4th St. (behind cemetery), Beaver,
PA 15009; (724) 728-5571


RC Ave. Raceway, 324 McKinley Ave.,
Latrobe, PA 15650; Scott Smith,
(412) 537-5501


RC Outfitters RCO Raceway, 519
Broadway, Hanover, PA 17331;
Chris Shaffer, (717) 633-9490;
http://rco.webjump.com

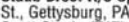

R/C Pro III, 910 Chestnut St.,
Coal Twp. (Shamokin), Shamokin, PA
17866; John Swisher,
(570) 648-7763


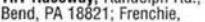
Riverside Raceway, Penna. Ave. W. &
Hickory, Warren, PA 16365;
Jeff, (814) 723-4211


S.A. Hi Banks, Hahn's Dairy Rd.,
Palmerston, PA 18071;
Scott Andrews, (610) 826-4583


Somerset Hobby Shop Outlet, 4309
Glades Pike, Somerset, PA 15501; Bob
Rhodes, (814) 445-6214


Staub Bros. R/C Speedway, 31 Locust
St., Gettysburg, PA 17325; Todd or
Scott Staub, (717) 334-5445


TnT Raceway, Randolph Rd., Great
Bend, PA 18821; Frenchie,
(607) 775-1750 or Ed Kraft,
(570) 967-2604


Trains & Lanes Raceway, 3825
Northwood Ave., Easton, PA 18045;
Jeff Setzer, (610) 253-8850,
(800) 447-4891


Willow Mill Speedway, 37 N. Season's
Dr., Dillsburg, PA 17019; George
Verbovitz, (717) 432-4445


World A.T.L.A.S./P.A.R.C.E. R/C
Raceway Hobby Shop & R/C Club,
Chester Exchange Mall, 10th & Morten
St., Chester, PA 19013; Darryl, Lee or
Marc, (610) 874-2540


PUERTO RICO

Area 51 On Road Track, Carr 931 KM
1.5, Bonavaro, Gurabo,
PR 00745; (787) 739-1572


Cidra R/C Track, Carr 7787 KM 1.6, Bo
Beatriz Adentro, Cidra, PR 00739;
Humberto (Tito) Lizardi,
(787) 739-1572


Dorado Offroad R/C Track, Pista
Atletica Bo. Higüillar, Dorado, PR
00646; Roberto Lamosa/Jaime Ramos,
(809) 796-5603 or (809) 796-1734


Hacienda Muñoz R/C Track,
Carr. #14, Juana Diaz, PR 00795;
(809) 837-7083


Hi-Speed C Raceways, 422 San
Claudio Ave., San Juan, PR 00926;
Carlos Ortiz, (787) 283-0198


Isabela R/C Track, 390 Sur Guaynabo,
PR 00969; Fernando Salcedo or Albaro
Obregon, (787) 720-1176


RHODE ISLAND

Tri-State R/C Raceway,
205 Hallene Rd., Warwick, RI 02886;
Raymond Dean, (401) 738-4908


SOUTH CAROLINA

Atlantic World of Hobbies,
2458 Remount Rd., North Charleston,
SC 29406;
Jimmy Closson, (843) 554-3546


Bethany Motor Speedway, 959
Wilmohr Rd., Clover, SC 29710; Eddie
Spearman, (803) 222-4758


Carolina R/C Speedway, 4148 Calhoun
Memorial Hwy., Easley, SC 29640;
Craig Prah, (864) 295-1209;
www.carolinarc.com; cprahrc@mind-
spring.com


Darlington R/C Raceway, Hobbies &
More, 1570 S. Main St., Darlington, SC
29532;
(843) 393-035

TENNESSEE

D&M's Downtown Raceway, 2703 U.S. Hwy. 411S, Maryville, TN 37303; (423) 681-8919
Futrell's R/C Hobby Shop, 1715 Jackson Ave., Seymour, TN 37865; Dan Futrell, (423) 908-9526

Hobby Town USA, 2000 Mallory Ln., Franklin, TN 37067; Bobby Mills, (615) 771-7441

Interstate Raceway, 5237 Highway 126, Blountville, TN 37617; Dale or Mark, (423) 323-1513; mktstarnz@intermediat.net

MID-South Racing Association, 9155 Hwy. 72 (Poplar Ave.), Germantown, TN 38138-7903; (901) 757-8774

MSA Racing, 120 Village Way, Crossville, TN 38555; D.R. Findley, (931) 456-0027

R & R Racing Portable Track, RR3, Box 34, Linden, TN 37096; Ross or Ron, (931) 589-5433

TnT Raceway, 643 Loop Hollow Rd., New Tazewell, TN 37825; Cliff Swett, (423) 869-8942

W.O.W. Raceway, 59 Luray Rd., Beech Bluff, TN 38313; Brad Jones, (901) 423-4784; email: womgr1@abac.com; http://go.to/wowracing

TEXAS

215 Speedway, 1814 County Rd. 215, Abilene, TX 79602; Clyde Gardner, (915) 673-2351

B&B R/C Hobbies, 700 East 4th, Big Spring, TX 79720; Walter Bumbulis, (915) 263-1790

Big Mike's R/C Raceway, 1405 W. Cotton St. (behind the Locker Room), Longview, TX 75604; (903) 297-7814

Comanche Trail RC Park, City Park, Big Spring, TX 79720; Allen Nichols, (915) 263-4241

Discount Hobbies, 1722A West Anderson Loop, Austin, TX 78757; Tony Bermudez, (512) 458-2324

Drycreek Raceway, 5903 Co. Rd. 2297, Quinlan, TX 75474; Micky Alphin, (903) 883-4060

Finish Line Raceway, 2775 N. Hwy. 360, Ste. 637, Grand Prairie, TX 75050; Steve Manning, (817) 652-3340

Hal's Hobby Raceway, 1440 Bessemer, El Paso, TX 79936; (915) 591-2213

Hobbytown USA, 999 E. Basse Rd., Ste. 177, San Antonio, TX 78209; Joe Sena or Clark Baisdon, (210) 829-8697; fax (210) 829-8707

Hot Rod's Raceway, 4218 Boston Ave., Lubbock, TX 79413; Rodney, (806) 797-9964

Indy R/C World, 2020 Saturn Rd., Garland, TX 75041; Steve, (972) 271-4844; www.indyrworld.com

Issac's Race Track, 18177 Gulf Frwy., Houston, TX 77598; Issac Ben-Ezra, (281) 488-8697

K & M Raceway Inc., 45000 Hwy. 59 N., New Caney, TX 77357; Brent Mahaffey, (281) 399-9777

MBRC Off-Road Raceway, 204 D&E Valley Ln., Kennedale, TX 76060; Mike Battaile, (817) 563-1900

Mammoth R/C Racing, 4221 Spencer, Pasadena, TX 77054; John, (713) 946-2522

Mike's Hobby Shop Superstore and Raceway, 1605 Crescent Cir., Carrollton, TX 77056; (972) 242-4930; www.mikes hobbyshop.com

Performance Raceway, 1106C Witte Rd., Houston, TX 77055; Jorge or Terry, (713) 464-4458

Rev It Up Raceway Practice Track, 3078 Kellar Rd., Smithville, TX 78957; Rev, Alton T. Edwards, (512) 237-5903

Rick's R/C Raceway, 238 Scenic Loop, Boerne, TX 78000; Rick, (210) 981-2245 or Rich, (210) 590-1805

The Rollcage, 3819 Hwy 34 South, Greenville, TX 75402; rollcage2000@earthlink.net; www.the rollcage.com

Star/Car Raceway, 5802 Patton St., Corpus Christi, TX 78415; Glen Stead, (512) 949-8525; Race Hotline, (512) 881-6105

T&M Raceway, 4150 Beltline Rd., Addison, TX 75244; (972) 478-2399

T&T R/C Cars, 3420 Ave. K., Suite 154, Plano, TX 75074; Joe Sullivan, (972) 633-2470

Texas Speedway, 6703 Chimney Rock, Bellaire, TX 77401; (713) 861-7137; www.texas speedwayRC.com

T.O. Offroad Raceway, 6236 Quail, El Paso, TX 79924; Efran Saenz, (915) 821-7522

Warehouse Radio Controlled Raceway, 5119 Plains Blvd., Amarillo, TX 79101; Craig or Darren Waddell, (806) 356-9080

W.E.S. Hobby Race, 980 S. Fourth St., Beaumont, TX 77701; Edmond Richards, (409) 839-4929

UTAH

Intermountain R/C Raceway, 8481 W. 2700 S., Magna, UT 84044; David Mott, (801) 250-8303

Hobby Haven Raceway, 4135 West 575 North, Cedar City, UT 84720; (435) 865-1274

Payson R/C Raceway, 955 S. Main, Payson, UT 84651; Gus Wood, (801) 224-3852 and Lasca Wood, (801) 222-8677

Vision Hobby, 352 N. State St., Orem, UT 84057; Ken Rice, (801) 226-6226

WOR R/C Raceway, 3170 Brinker Ave., Ogden, UT 84401; Brian Worton, (801) 393-2530

VERMONT

Barre Town R/C Club, 14 S. Main St., Wall St. Complex, Barre, VT 05641; Russ or Pete, (802) 888-2860 or (802) 476-9458

Bradford R/C Racing, Main St., Bradford, VT 05033; Seth Bean, (802) 222-9674

Empire Hobbies Off-Road Raceway, 272 North Main St., Saint Albans, VT 05478; Scott or Jen; (877) 4-HOBBIE; email: mpirhobe@togethr.net;

Stoughton Pond Raceway, Stoughton Pond Rd., Perkinsville, VT 05151; Rick Adams, (802) 263-9321

VIRGINIA

Brad's Hobbies, 1105 Greenville Ave., Staunton, VA 24401; Brad, (540) 885-3642

Brown Brothers Hobbies, 928; N. Main Street, Dumfries, VA 22026; Joe or Bob Brown, (703) 221-5746; www.bb.hobbies.com

Cooper's R/C Race Center, 4000 Sago Rd. (969), Chatham, VA 24531; Norris Cooper, (804) 724-7342 or (804) 724-1482; website: http://coopersrc.virtu-alave.net

DRCW Raceway, Debbie's RC World, 2200 Commerce Pkwy., Virginia Beach, VA 23454; Les Modlin, (757) 340-6681

Gloucester Scale Hobbies, 2352 George Washington Memorial Hwy., Hayes Plaza, Hayes, VA 23072; Rob Thien, (804) 642-3484

Hampton RC Speedway, 1920 E. Pembroke Ave., Hampton, VA 23663; Steve Long or Mickey Kern, (757) 723-1884; website: www.fortunecity.com/olympia/norman/26/

K & W Hobby and Sports, 5186 Nine Mile Rd., Richmond, VA 23223; Ross Martin, (804) 737-3904

KC's Radio Control & Repair, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596

Olde Towne Hobby Shoppe, 9105 Center St., Manassas, VA 22110; Arnie Levine, (703) 369-1197

The Racer's Edge, 1230 West Main St., Danville, VA 24541; Al Harville, (804) 792-6011; email: webmaster@theracer-edge.virtualave.net; http://theracer-edge.virtualave.net

Roadmasters/ Rick's Hobbies, 12201 Balls Ford Ave., Manassas, VA 22110; Rick, (703) 330-6833

Shamrock Raceway, 106 Cheviot Pl., Stephens City, VA 22655; Scott Janow, (540) 869-3551; note: track is located in Winchester, VA

Thunder Road RC Racing, P.O. Box 1222, Troy, VA 22974-1022; James Palmer, (804) 589-8174

Thunder Road RC Speedway, 18079 James Madison Hwy, Gordonsville, VA 22947; Robert Bingler, (804) 296-6549; rwb3y@virginia.edu

The Tiltyard, 6994 Tiltyard Dr., Dayton, VA 22821; (540) 828-3476; www.tiltyard.com; tiltyard@rica.net

Trainlano R/C Racing, 5661 Shoulders Hill Rd., Suffolk, VA 23435; Frank Stevens, (757) 488-5454

WASHINGTON

A-Main Raceway, 14011 N.E. 3rd Ct., Vancouver, WA 98685; Monty Coleman, (360) 571-8404

Bear Creek Raceway, 6319 Maltby Rd., Woodinville, WA 98072; Nathan Brockway, (425) 398-0140

Burien Toyota R/C, 15025 1st Ave. South, Seattle, WA 98148; Ray Meek, (800) 654-6456

Cedardale Raceway, 1673 Cedardale Rd., Mount Vernon, WA 98273; Joe Madonia, (360) 659-0072; email: getchell@halcyon.com

Fantasy World Raceway, 7901 S. Hosmer, Tacoma, WA 98408; Dave Kleinman, (253) 473-6223; www.fanta-syworldhobbies.com

Four Seasons R/C Racing, 2941 Sleater Kinney Rd. N.E., Olympia, WA 98506; Gary and Sharon Brown, (360) 491-2430

Hank Perry Raceway, 1901 N. Sullivan Rd., Spokane, WA 99023; Thom Mullins, (509) 928-2009

Race City, 125 E. Main St., Auburn, WA 98002; Craig Haslebach, (253) 939-2515; trackside (253) 939-2515

Redmond Hobbies Raceway, 16290 Redmond Way, Redmond, WA 98052; Stan Ng, (425) 885-3639; http://redmondhobbies.com

Schmidt's Auto Parts, 10305 Smokey Point Blvd., Marysville, WA 98271; Jon, (360) 653-8838; schmidtscraceway.com

Spokane Indoor Raceway, 6422 E. 2nd Ave., Spokane, WA 99212; Dave Mapston, (509) 534-RACE

Tacoma R/C Raceway, 6305 6th Ave., Tacoma, WA 98406; Scott Brown, (253) 565-1935

Rain City RC Raceway, 3616 South Rd., Suite A-3, Mukilteo, WA 98275; Peter, Andrew or Debbie, (425) 438-2454; ibauser@gte.net; www.raincity-raceway.com

Ultimate R/C Raceway, 907 Cole St. #3, Enumclaw, WA 98022; Dan Daugherty, (360) 802-2388

West Coast Hobby & Raceway, 2239 Stevens Dr., Richland, WA 99352; Darren Shank, (509) 375-4995

Zep's Hobbies & Raceway, 530 Interlake, Moses Lake, WA 98837; Steve Ralph, (509) 765-8191

WEST VIRGINIA

Burr-Fab Raceway, 90 Davis St., West Union, WV 26456; Mark Travis, (304) 873-2487

Fulton's R/C Raceway, 2646 Chapline St., Wheeling, WV 26003; James Fulton, (304) 233-5355

Left Turn Hobbies, 100 Saco Ln. (by Post Office), Glen White, WV 25849; Stretch, (304) 255-3930

Phillipi Superspeedway, R. 1, Box 69A, Phillipi, WV 26416; Eric, (304) 457-1438; Firehawk119@cs.com

Quiet Dell Raceway, Rt. 6, Box 1616, Fairmont, WV 26554; Darris, (304) 366-1441; Tateracing@aol.com

Race Zone, Hopewell Rd., Rt. 8, Box 343A, Fairmont, WV 26554; Joe Clutter, (304) 368-1000

WISCONSIN

ABC R/C Inc. & Raceway, 244 W. Main St., Waukesha, WI 53186; Dick Mathiesen, (414) 542-1245; www.abchobby.com; email: help@abchobby.com

Best's Hobbies, 2700 West College Ave., Appleton, WI 54914; Peggy, (920) 734-5244

Dirt Heaven Hobby and Raceway, 6028 County Rd. K, New Franken, WI 54229; sales@dirtheaven.com; www.dirtheaven.com

Aaron, (920) 866-9096

Gary's Hobby Center, 3701 Durand Ave., Racine, WI 53403; Bill Phalen, (414) 554-8884

Hobbytown USA - Revolution, Memorial Mall, 3347 Kohler Memorial Dr., #D2, Sheboygan, WI53081; Kenny, (920) 452-0801

MARCCA Raceways, 526 S. Monroe St., Monticello WI 53570 (mailing address only); George Sellon, (608) 243-1778; www.marcca.com

Mid-West Tri-Clone, 3745 Shuster, West Bend, WI 53095; Tom Holz, (414) 334-0429

Pro-Star Racing, 726 Pine St., Green Bay WI 54301; Chuck, (920) 494-1233 or Terry, (920) 469-5566

Revolution Raceway, Memorial Mall, 3347 Kohler Memorial Dr., #D2; Sheboygan, WI 53081; (920) 452-0801 or (800) 594-9420

R.J.S./R.C., 4920 Hwy 70W, Eagle River, WI 54521; Randy Stys, (715) 479-2541

S&N's Tracks Hobbies and Raceway, 6045 N. Green Bay Ave., Milwaukee, WI 53209; Scott Ernst, (414) 351-1910

WYOMING

Collectable Creations Off-Road Oval Track, 1790 Dell Range Blvd., Cheyenne, WY 82009; Phil Severson, (307) 632-2156

Wind River R/C Racing Association, 113 S. 3rd E., Riverton, WY 82501; Bob Belding, (307) 857-2068

Xtreme Hobbies Raceway, 2724 Powder Basin, Gillette, WY 82718; Krieg Balls, (307) 682-6077

ARGENTINA

Circuit M.R. Models, Av. Av. Monroe 1402, (1428) Capital Federal, Camino del Buen Ayre y Pte. Benediti, Buenos Aires, Maximiliano, 54-011-47801677

Club A. Velez Sarsfield, Av. J.B. Justo 9000, C.P. 1408, Buenos Aires; Jorge Herrero, 54-01-658-5851

AUSTRALIA

A.C.T. Model Car Racing Club, Off-road track—Wanniasa Raceway, Hyland Place, Wanniasa A.C.T.; indoor track—Epic Complex, Northbourne Ave., Canberra North A.C.T.; Gary Davey, 61-6-2871411

A.C.T. Remote Control Car Club, Jenke Circuit, Kambah, Australian Capital Territory; Rob Jorgensen, 61-2-6231-9925; email: sxs@dynamite.com.au

Aubry R/C Car Club, Aubry Showgrounds, Aubry, NSW 2640; Ron Langman, 060-247-128

Bayside Radio Control Car Club, Wynnman Manly Workers Club, Bogner St., Wynnman, Brisbane, Queensland 4178; Nigel Bell, 07-3893-1864

Carberra Off-Road Model Car Club, Goyder St., Narrabundah, ACT 2604; Graham Brown, 61-6-241-3070

Carine R/C Model Car Club Inc., Penistone Reserve, Greenwood, Western Australia; David Werner, 61-418-922-966

Central Coast ORCC, EDSACC Sports Complex, Bateau Bay, NSW 2261; Peter J. Knight, 61-43-693-698

Fast n' Fun, 250 Potreath Rd., Bellbrae West, Torquay, VIC 3228; Stephen Chara, 613 5266 1550 or 613 5266 1556; fax 613 5266 1556



Illawarra RCECC, Croome Sporting Complex, Albion Park Rail, NSW 2527; Mel or Andrew, 042-714-683



Lakeside R/C Racing Car Club, Hollywood Dr., Lansvale, NSW 2166; R. Bartolozzi, 62-2-907-9800



Melton Electric Circuit Car Association, Safeway Car Park, corner High St. and Coburns Rd., Melton, VIC 3337; Arthur Joslin, 61-3-9747-8805



Northern Districts Model Rally Club, Inc., Rear Stanford Centre, 16 Stanford Way, Malaga, Western Australia 6066; G. Thirlwell, 61 (9) 249 3855; fax 61 (9) 249 4778; email tony@ois.com.au



Penfield Park, DSTO Complex Salisbury, Adelaide, South Australia 5108; Trevor Unsworth, 618 8289-5010



R.C. Speedway, 259 King St., Newcastle, NSW 2300; Andrew Dillon-Smith, 02-49265966



Templestowe Flat Track Racers, Templestowe Reserve, corner of Porter St. and Williams Rd., Templestowe, Melbourne, Victoria 31066; Renato Benci, 61 (3) 9553 4625



Woe Waa's Offroad RC, KYEEMA, Burren Junction, N.S.W. 2386; Shane, 61-02-6796-1339



Wodonga R/C Car Club, 11 Murphy St., Wodonga, VIC 3690; Ron Langman, 61-60-247-128



AUSTRIA

RMC-Wien, Aspernstrasse 5, Vienna, A-1220; Herbert Holze/Martin Hrzak, +43-664-4730376



BELGIUM

ATR-Alka-Tele-Racing, 3570 Stationstraat 21, Alken Limburg; 0032-11-25-49-03



Cartroubles Indoor Buggy Track, Jan Moonsstraat 52-56, 2160 Wommelgem; Guy Ermes, 32-3-326-51-15; fax 32-3-326-51-01



MBV-Kampenhout, Teniersin 28, Kampenhout B1910; Frank Mostrey, phone/fax 0-16-65-75-18



MRCZ, Centrum, De Burg; Montie, 75-71-63



Model Racing Club Oudenaarde, Scheldedekant, 9700 Oudenaarde; A. Chanterle, 32-55-31-36-48; fax 32-55-30-19-12



R.C.R., Pellstraat 43, Retie 2470; A. Eelen, phone/fax 32-14-379685



BRAZIL

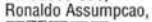
Amoc Cassioçao de Modelismo B. Camborio, Junto ao Par Que Ecologico de Bal. Camboriu, Bal. Camboriu, S.C. 88.330-000; Leo Cesar, (047) 366-0001



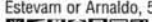
Brasilia R/C Motor Circuit, Estacionamento do Estadio Mane Guarrincha, Brasilia, DF 70000; Alexandre (Alex), 55-061-273-7205



C.A.A.R. Curitiba Associacao de Automodelismo Radiocontrolado, Rua Theodoro Makioka, 2300 Santa Candida, Curitiba, PR 82650-530; Ronaldo Assumpcao, 55-41-354-2804



Electric Car Club R/C Santos, Av. Bernardino de Campos, 227, Santos, SP 11065-001; Estevarn or Arnaldo, 55-013-232-2536



Hamilton Neto Associaca RC, Rua Uterere 259, Curitiba, Paran 80380-400; Danico Pilhax, 55-41-338-8041; hammer_usa@hotmail.com



Hobby Center, SQS.210 BLH Apt. 204, Brasilia, DF 70.273; 061-242-0488



Hobby Planet Racing Club, Rod Dom Pedro 1, KM 1315, Campinas, Sao Paulo 13091901; Daniel, Helio, Luciano, 019 258 2768



Jungle Drive, Rua Alberto Maranhao, No. 219 Icha do Gov. Rio de Janeiro, 21940-13091; Paulo Brito, (021) 396-0851 or (021) 393-7449



MP Raceway, Av. Nacoes Unidas, 6815 Lapa, Sao Paulo; Gerd Heitrotter, 55-11-9819039; www.hpraceway.com.br



Off Roaders, Av. Guillermo Dummont Villars, 317, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931



Way of R/C Off-Road Cerrado, Rua Paraiba 1323, 1st floor, Belo Horizonte, Minas Gerais; Claudio T. Correa, (031) 227-6111, fax (031) 227-6869



CANADA

Action Weelz, 462 Turcotte, Vanier, Quebec, G1M 1R6; Regent Tardif, (418) 527-5756



Advance R/C Raceway, 4181 Sheppard Ave. E., Scarborough, Ontario M1S 1T3; Albert Lau, (446) 321-8377



The All New R.C. World, 2633 Hwy. #6, Mt. Hope, Hamilton, Ontario L0R 1W0; Dave, (905) 765-2301, Larry, (905) 333-3297 or Brian, (519) 752-0044



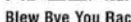
ATN, Auto Teleguidee Nicolet, 2000 Rue Paul Hubert, Saint-Jean-Baptiste-de-Nicolet, Quebec J3T 1E5; Louis Durand, (819) 293-6097



Auto Sprint, 6065 Des Grands Prairies, St. Leonard, Quebec H3G 2R6; David Kalayjian, (514) 287-3503



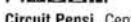
Blew Bye You Raceway, 134 Dike Rd., Chilliwack, British Columbia V2P 5B1; (604) 792-8978



Circuit J.C., 1283 Chemin, St. Philipe, St. Polycarpe, Quebec J0P 1X0; Jean Castellon, (514) 265-3675



Circuit Pepsi, Centre de Location, 37 duRoi, Sorel, Quebec; (514) 746-8828



Circuit Plessis, 260 Rang 9 Ouest, Plessisville, Quebec G6L-2Y2; (819) 362-3743



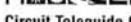
Circuit R/C Pro, 1500 Chemin Sullivan, Val d'Or, Quebec; J9P 1M1; R/C Modeler Plus, (819) 874-3918



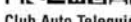
Circuit Teleguide St. Roch, 363-8 St. Charles, St. Roch De L'Achigan, Quebec J0K 3H0; (514) 588-4254, fax (514) 588-6554



Circuit Teleguide Grand Prix II, 701, Sainte-Rose, Ste. 200, Laprairie, Quebec, J5R 1Z2; (450) 444-1286



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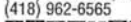
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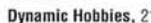
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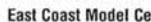
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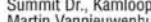
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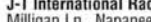
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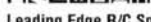
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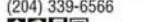
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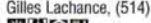
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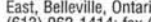
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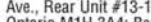
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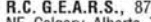
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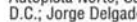


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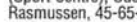
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Chris's BACK LOT

The opinions expressed on this page do not necessarily represent the opinions of the entire Car Action staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o R/C Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. My email address is: chrisc@airage.com.

BY CHRIS CHIANELLI

Homebuilt Challenge Winners

In the September issue's dose of "Back Lot," I asked you guys for your wildest designs—and you gave them to me. As a matter of fact, I was so overwhelmed, I couldn't choose just one winner. You guys were so creative that I simply had to award "First Place" to two readers, and hand out a bunch of "honorable mentions" as well. Remember, this is my page—MINE!—and I can do whatever I want.

First Prize number one goes to Brian Post for his "Trail Maker" and First Prize number two belongs to Matt Zu (cool name, Matt!) for what I call—since he didn't name it—his "Flower Bed Enforcer."

Second prizes of free, one-year subscriptions (or extensions) to *RC Car Action* go to David Su for the "Maxxummer" (my name for his creation), David Beane for the "Hovertruck," Charles Randall for his well-executed "Reduction Out-Drive" monster truck transmission design, and last, who could leave out Zak Swartz and his highly creative, liquid-propelled concept called "The Silvery Blobmobile"? So sorry to inform you, Zak, that you and I have a lot in common.

To those of you who didn't win: don't fret too much; I'll do this challenge again. If it makes you feel better, you can also hate me for a month. It's OK; I can handle it.

FIRST PRIZE

Hudy engraved wrench set. Hudy is machining "Brian Post" in the handles right now!



THE OTHER FIRST PRIZE

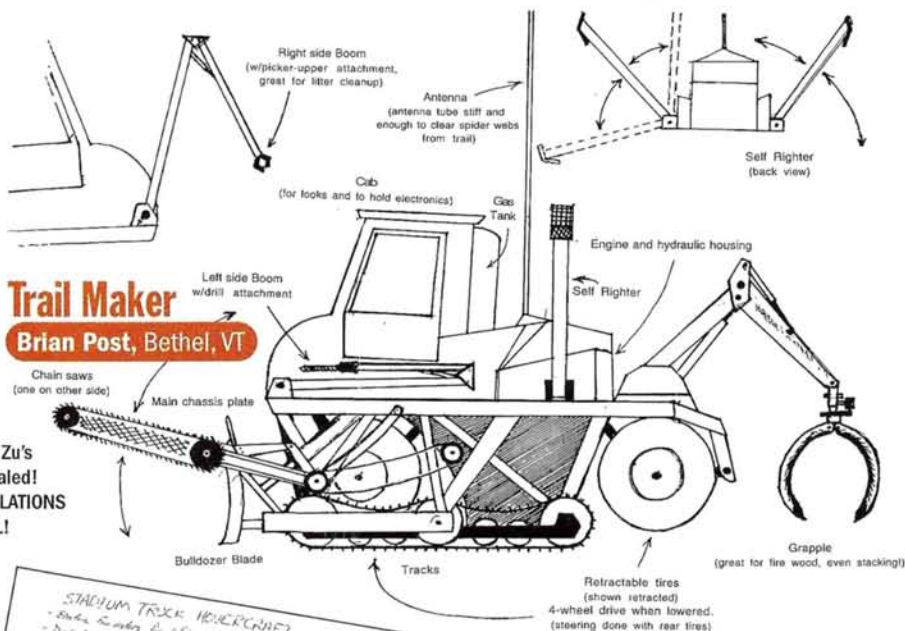
Hudy touring car setup board and gauges. Matt Zu's sedan will be dialed! CONGRATULATIONS TO ALL!



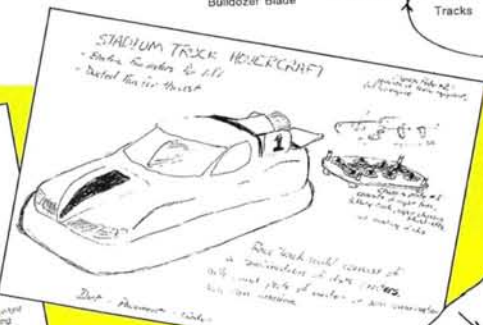
MY IDEA: A RYOBIO W/NO FLIGHTS WITH TRUCK CAB AND 1 FIRST BUILT TRUCK BED SUPPORTING A HIGH PRESSURED WATER CANNON. EVEN STARTS A WEED CUTTER AND BACKHOE BIGGER.



Flower Bed Enforcer
Matt Zu, Lancaster, CA



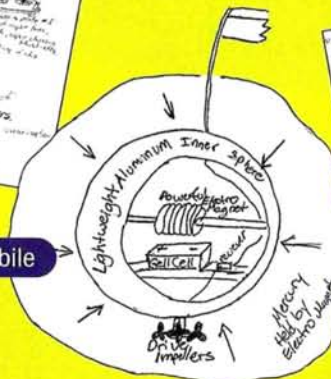
Trail Maker
Brian Post, Bethel, VT



David Beane Hovertruck

Zak Swartz Blobmobile

Charles Randall Reduction Out-Drive



David Su Maxxummer

